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IS is from Mars, business is from Venus. They say you should align IT strategy with corporate goals – but that's easier said than done. **Corporate Strategies, page 39**

Which technologies provide the greatest business value? IS professionals have a tricky time spelling it out. **Managing, page 69**

COMPUTERWORLD

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Heed the warning!

▸ *IS must test third-party Y2K fixes for compliance*

By Jaikumar Vijayan

MOST MAINFRAME shops have been so preoccupied with updating homegrown software for the year 2000 rollover that fixing packaged applications has been put on the back burner.

And of those information systems departments that have turned their attention to third-party applications, many said they will rely on vendor assurances about millennium date compliance.

Either way, it's a big mistake.

Failure to budget the time, resources and effort needed to ensure that third-party products are ready and tested to work in a renovated environment could undo all the work done on homegrown applications, users

Year 2000, page 103

Rare deal: Self-funded outsourcing

▸ *U.S. Chamber pact covers it all for 10 years*

By Bob Wallace and Julia King

IN AN UNUSUAL move, the U.S. Chamber of Commerce has outsourced everything but the kitchen sink in a 10-year, $75 million deal with Cap Gemini America.

The Chamber's pact extends far beyond information systems to include data and voice wide-area network services, Internet access, telephone switches, a World Wide Web site and a virtual private network.

Few companies opt for such a sweeping approach to outsourcing, and the Chamber's effort is particularly unusual, analysts said. That is because of the breadth and depth of the outsourcing and because the initiative is self-funding and depends on the U.S. unit of a European outsourcer that doesn't have a long track record in the U.S.

And the Chamber not only is among the first nonprofit organizations to outsource, but it

Outsourcing, page 14

CIO Peter J. Olle says the IS department at Manor Care helped design new corporate offices to foster collaboration

'net used to extend EDI's reach

By Carol Sliwa

LIKE MANY companies, Boise Cascade Office Products Corp. has no illusions that its Internet-based ordering system will replace the electronic data interchange system favored by many of its major trading partners. But early returns look promising.

Internet-based ordering is "a win-win," says Boise Cascade's Laura Longcore

The Itasca, Ill.-based supplier's year-old Internet operation already has paid off significantly: $1 million in bottom-line savings and 1,300 trading partners that post electronic orders using a

EDI, page 16

IT ARCHITECTS: They design office space, too

Getting the IS department involved in the design of data centers or the placement of network cables is a no-brainer. But as companies expand, move or restructure, IS is becoming an equal partner with other departments in designing the office environment of knowledge workers.

Why? Because central IS, with its view of all operations, may be in the best position to see where the business can boost collaboration and productivity, reports senior editor Gary H. Anthes.

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GET ME ORACLE, STAT!
Baltimore hospital performs system transplant on the fly. Page 2

THE ULTIMATE INSIDE JOB
Company allegedly hacked by its own net administrator. Page 6

Disaster plans lag
Everyone thinks it can't happen to them . . . until it does. Page 10

Warehousing tracks big spenders

By Craig Stedman
SAN DIEGO

FIRST AMERICAN CORP. has completely altered the way it sells financial services. And a data warehousing project was the catalyst.

The data warehouse lets First American target its marketing efforts at customers who are the most profitable to the $11 billion company, said Mary Ann Beach, senior vice president of information management.

Sales and marketing employees at Nashville-based First American have had to make "a cultural transformation" from simply selling whatever to whomever, said Beach, who

Data warehousing, page 17

MCI's Dave Johnson says his company's data warehouse is helping the marketing department target customers

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UP FRONT

Upsizing Java

In case you missed it, Java is not the Windows killer any more.

Although the war of words between the Sun and Microsoft camps continues to some extent, the Java coalition lately has started talking down Java's potential to knock Windows off the desktop and started boosting its image as a distributed programming language and runtime environment. It's a good change.

I've seen many interesting Java applets, but few that really leverage the power of the network. Developers have spent the past two years figuring out Java and have come up with programs that look and feel like, well, Windows programs. But efforts to replicate the familiar PC environment in Java have largely failed. Corel's Java office suite was a disaster. Lotus' ESuite looks interesting, but its demo reminds me of a low-end "works" package. The concept of loadable applets has appeal, but I question whether users will get excited about the features.

The new factor is Enterprise JavaBeans.

That's a big reason why Java supporters have seized on the server — where platform incompatibility rules the day — as Java's home-field advantage. The new factor in this is Enterprise JavaBeans, a set of specs for building distributed applications using Java. Enterprise JavaBeans is compelling because it addresses the knotty server incompatibilities that make distributed applications such a bear to deploy.

Not surprisingly, Microsoft won't support Enterprise JavaBeans. But Microsoft's opposition will be weaker on the server than it is on the desktop. Server-side Java offers developers the chance to really rethink the way they build applications, using multiple platforms in a way that makes the most sense. It's a strategy that plays to Java's strength as a potential corporate platform standard, not as a Windows killer.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

"I don't care what your E-Mail friends in Europe say, you're not having a glass of Chianti with your bologna sandwich."

E-mail Rich Tennant at thefyvave@tiac.net

Systems 'code blue'

▸Maryland hospital switches to new applications on the fly when its old system gives up the ghost

By Craig Stedman

NORTH ARUNDEL HOSPITAL near Baltimore had a flatlining patient on its hands. But it wasn't a person.

The deceased was the hospital's decade-old computer system, which up and died just before Thanksgiving — months before new applications built around an Oracle Corp. database were due to be ready.

Faced with a systems "code blue," executives at the 330-bed hospital swallowed hard and decided to switch right then and there, a move that put end users and the information systems staff under the gun for the next month.

CRISIS TRAINING

Workers got on-the-fly training on using the new system to admit, discharge and locate patients. Meanwhile, the 25-member IS department worked around the clock to stabilize the system and install new PCs, printers, fax machines and wiring. And everyone had to make sure patient care didn't suffer.

"The first week was chaos, basically," said Lynn Patterson, a nurse manager at the nonprofit hospital in Glen Burnie, Md. "At first, people didn't believe it and kept thinking the old system would come back."

One-on-one training went on 24 hours per day, Patterson said. Meanwhile, a crisis team of business managers and IS employees met daily "to figure out how to keep patient care going and the staff on an even keel," she added.

The new applications were a long way from being ready when the old custom-built system went down for good, said Tom Witmer, IS director at North Arundel. The admissions and discharge module wasn't even slated for pilot use until early January.

"It was traumatic for people," Witmer said. "No one knew how to do anything [with the new system]. But you don't close a hospital."

The crisis began at 4:30 a.m. on the Sunday before Thanksgiving when multiple disk drives in North Arundel's "museum-piece" system failed at the same time, Witmer said.

The drives weren't supported by their vendor anymore, and hospital staffers spent 16 fruitless hours trying to revive them.

Finally, hospital management made the call to plug in the new system, which was written with Oracle's development tools and runs on a foursome of Digital Equipment Corp. Unix servers.

North Arundel Hospital's Tom Witmer says the change "was traumatic for people. . . . But you don't close a hospital."

At first, patient admissions and orders for laboratory tests and X rays were done on paper. IS workers loaded the new database and installed about 100 pieces of hardware overnight, while a consultant at Redwood Shores, Calif.-based Oracle banged out a working version of the admissions application. The new system was turned on the next morning. About 1,200 user IDs were handed out during the next four days, Witmer said.

North Arundel Hospital has the third-busiest emergency room in Maryland, averaging about 64,000 patient visits per year, according to hospital officials. And the occupancy rate in its 330 beds has been close to 75% since December.

Hospitals rely on "a very tightly knit information flow" that starts with admissions, said Uwe Reinhardt, an economist and health care expert at Princeton University in Princeton, N.J. But the typical user "is not necessarily computer-adept," he added.

North Arundel's old system used diskless terminals that were operated simply by pushing a set of buttons. It took two weeks to get employees comfortable with PCs and to wean them from admitting and discharging patients on paper, Patterson said.

And data quality was a problem early on, Witmer said. Nurses made rounds at the hospital to make sure the patient census listed in the system conformed to the reality of who was in what room.

Full training courses finally have been squeezed in for about 1,500 employees. But laboratory tests and X rays still are being ordered on paper as development continues on that part of the new system.

"We're still just coming out of this," Witmer said. □

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CA/CSC fight raises concerns

▸ *Takeover battle could shift focus off customers*

By Patrick Dryden

THE PROLONGED, hostile takeover battle between Computer Associates International, Inc. and Computer Sciences Corp (CSC) could weaken both parties and harm CSC customers, analysts say.

"We're concerned about this takeover draining energy that should be focused on us," said CSC outsourcing customer Dick LeFave. He is vice president and chief information officer at Southern New England Telecommunications Corp. in New Haven, Conn.

CSC last week formally rejected CA's takeover bid. CA responded by saying that it will forge ahead with its acquisition plans.

Some analysts said CSC already is stretched too thin to maintain service levels.

If the takeover goes through, CA will inherit CSC's organizational turmoil, unprofitable contracts and unhappy customers, said Julie Meringer, a services analyst at Forrester Research, Inc. in Cambridge, Mass.

The computer services industry is expected to take in more than $300 billion in revenue worldwide by 2002, according to Forrester Research, Inc.

"CA should take this opportunity to back off and pick another services bride," Meringer said.

LeFave said he can understand why, after a good three-year outsourcing relationship with CSC, CA seeks a strong services arm to maintain its products. "But I can't fathom why CA would risk losing the intellectual talent that makes CSC great through a hostile takeover."

A hostile takeover could trigger the loss of CSC expertise for many reasons, according to analysts. Those include a fear of CA's reputation for layoffs, a clash of corporate cultures and the opportunity to take their skills to high bidders in a healthy market.

THREAT TO INDEPENDENCE

Also, some organizations fear that CSC would lose its independence to recommend the best product for each situation, according to Rita Terdiman, a vice president at Gartner Group, Inc. in Stamford, Conn.

"Neutrality won't be clear-cut after a CA acquisition," Terdiman said.

By forcing CSC's allegiance, CA risks losing what it seeks, said Allie Young, an outsourcing analyst at Dataquest in San Jose, Calif.

"The feedback from CSC employees and customers has not been positive," she said. "It's a grave error for CA not to listen to the message here." □

& Decline in CA stock leads investors to question CSC acquisition bid. Page 101

Regulations, cultures KO consulting firm merger

▸ *Ernst & Young, KPMG cancel; expected to seek new partners*

By Julia King

CITING REGULATORY issues and the cost of merging two disparate corporate cultures, Ernst & Young LLP and KPMG Peat Marwick last week canceled their planned merger.

The announcement elicited mixed reactions from clients of those Big Six consulting companies, whose marriage would have created the world's largest accounting and consulting company, with more than $18 billion in annual revenue.

"My own personal view is that bigger is better, so I'm disappointed to see the merger go south."
– Jim Wolff, American Commercial Lines

"My own personal view is that bigger is better, so I'm disappointed to see the merger go south," said Jim Wolff, chief financial officer at American Commercial Lines, Inc., a commercial barge company and Ernst client located in Jeffersonville, Ind.

"My view is that a larger corporation can play better to my needs," Wolff said. But he added that he doesn't expect Ernst or KPMG to remain single. "Eventually, they'll merge with somebody else," he said.

But if and when that happens, customers probably won't notice big changes, said Andy Hafer, technology chief at Hydro Agris North America in Tampa, Fla. "The reason is that the services you purchase from any of the Big Six are only as good as the individual [consultant] from the local office," Hafer said.

NOT MUCH CHANGE

For example, a few years back, KPMG bought Setac, the company Hafer had hired to implement SAP AG's R/3 software at Hydro Agris.

"The same individuals stayed on [the SAP project], and there was no difference, other than I got a couple of calls from a KPMG partner," Hafer said.

Tim Bourgeois, an analyst at Kennedy Information in Fitzwilliam, N.H., agreed that, for clients, the expertise of individual consultants is more important than company size.

"At the end of the day, a consulting project wins or loses, succeeds or fails as a result of the project manager, whether they're from Ernst & Young, Price Waterhouse, Coopers & Lybrand or KPMG," he said. □

DEC draws road map to next Alpha upgrade

By Jaikumar Vijayan

MAYBE THERE'S A future for Digital Equipment Corp.'s Alpha line after all.

The Maynard, Mass.-based company will follow its recent announcement of a next-generation 21264 Alpha chip with a road map next month that details plans for even faster processors and servers over the next few years.

CHIP FUTURES

The moves are aimed at reassuring skittish Alpha users that Digital's commitment to the Alpha architecture remains as strong as ever in the wake of its proposed acquisition by Compaq Computer Corp.

"Despite all the hue and cry about Alpha, it appears, at least from a technological point of view, the architecture has a leg up on the competition," said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass. "The questions that remain are about public perception and marketing."

Digital will begin shipping its third-generation Alpha 21264 in May, said analysts briefed by the company.

The firm also is slated to ship a 32-processor Alpha server, code-named Wildfire, by year's end. The systems, which can be clustered to support up 1,000 CPUs, will support OpenVMS, Unix and Windows NT, up to 128G bytes of memory, up to 64 Peripheral Component Interconnect (PCI) buses and up to 224 PCI slots.

Digital will follow that in December with an even faster 0.25 micron processor — known as the EV67 — featuring clock speeds of up to 800 MHz. EV68, a smaller version of the chip, built on the same 0.18 micron technology that Intel uses for its 64-bit Merced, will debut in late 1999 and have clock speeds in excess of 1 GHz. □

Intel eyes diversification

By April Jacobs

INTEL CORP. Chairman Andrew Grove last week outlined how the company will meet the needs of PC users who work with a range of machines, from entry-level to high-end equipment.

Speaking at the Intel Developers Forum in San Jose, Calif., Grove said the company is heavily focused on moving into the low-end computing arena. But, he added, Intel will continue its efforts to invest in the workstations and enterprise server markets.

Grove said Intel's strategy is to expand its product line by using a common foundation, the P6 microarchitecture, across an entire family of new products designed for specific market segments.

A new low-end processor under development, code-named Covington, is slated to begin shipping at midyear. It will use the P6 microarchitecture. □

LEARNING TO
SHARE

Companies can benefit from knowledge management if they build the right infrastructure to help their employees share information. And many IS managers may be surprised to learn that they already have a lot of the software tools in place. *Review Center, page 75*

Reynolds Metal's Hank Chewning foiled costly errors with a new forecasting system. **Software, page 53**

This month in Intranets, building business applications. **Our supplement follows page 40.**

The Book-of-the-Month Club's Michael Curry boosted sales by offering Web-based convenience. **The Internet, page 41**

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BT payment trial handles small Web transactions

▸ *Lets merchants bill for items priced as low as 16 cents*

By Sharon Machlis

BRITAIN'S LARGEST telecommunications company has launched an Internet "micropayment" trial, although it turns out some of the payments aren't so micro.

The idea behind World Wide Web-based micropayments is for companies to sell things over the Internet in small slices, such as by news article, digitally downloaded music single, game session and the like. Conventional credit cards weren't designed to handle transactions that might cost only a quarter.

> **"We have actually sold things we probably wouldn't have otherwise sold."**
> **– John Suckling, Hemmington Scott**

"It's something we've actively been looking at for two years now," said Mike Stoeckel, director of business technology at Time New Media, Inc. in New York. "We are not sure when the user acceptance will occur."

A PENNY EARNED

The British Telecommunications PLC project, called Array (*www.btarraybt.com/*), is targeted at purchases that range from 10 pence to 10 pounds (about 16 cents to $16.50). However, several companies involved in the payment trial said they are selling goods that cost $15 to $20, which several book- and CD-selling sites already successfully do with conventional credit cards.

But participants said the pilot program offers other benefits, even if it doesn't yet feature many transactions smaller than those already being handled by credit cards elsewhere.

Hemmington Scott Group in London, which sells research reports to investors, is happy to let BT conduct credit-card authorizations for its new per-report Internet transactions in return for BT taking an undisclosed piece of each purchase.

For the customers, each purchase is added to their BT Array account, but their credit card generally isn't billed until there is at least a threshold of 5 pounds (about $8.25).

JUST ONE, PLEASE

This marks the first time Hemmington Scott is selling individual reports to the general public over the Internet instead of by subscriptions (which are done outside the BT project).

"We've entered into the trial with BT to learn about the buying habits of this particular market," said John Suckling, general manager for electronic information services. "We have actually sold things we probably wouldn't have otherwise sold."

Consumers register for a BT Array account using a credit card. They then select a user name and password and use them to make purchases at participating merchant sites, which send transaction data back to BT for authorization and account billing.

Which Online, the Internet publishing arm of London-based Consumer Associates, offers three of its guides through the program. Selling individual guides online is unlikely to replace its subscriber base, said managing editor Paul Kitchen. But it might be a way to attract those people "who won't subscribe to anything. . . . We would be silly not to be planning for other ways to slice up our content if the 'net moves in another direction," away from subscription fees, he said. □

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Wireless revolution fizzles

▸ *But analysts predict the age of wireless will come with the new millennium*

By Kim Girard

MORE THAN A decade after the first promise of a wireless data revolution, road warriors still are seeking out phone jacks.

Wireless renegades dot every sales force armed with smart telephones or wireless modems connected to notebook computers, PalmPilots and Windows CE devices.

But analysts said wireless data technology integrated to the corporate network remains a tough sell.

To date, wireless data access has made inroads among utilities, trucking companies, health care professionals and others willing to pay the price — typically 30% more than dial-up services — to equip hundreds of mobile workers.

But the market remains sluggish overall, plagued by confusion over services, high prices and widely different platforms.

"We've never felt a wireless network would be advantageous," said Don Frazier, vice president of MIS at Paul Arpin Van Lines, Inc. in East Greenwich, R.I. "It's kind of like buying a digital TV. I know it's better; I'm just not so sure I need to have it."

"[This year] will be the year of wireless data awareness, and 2000 is wireless data adoption."
– Bob Egan
Gartner Group

"We evaluated [wireless data] a while ago," said Rob Glidden, a senior engineer at Liberty Mutual Insurance Co. in Boston. "The technology wasn't there yet. Due to the expense, I think [wireless] will take a while."

But as demand for mobility and constant connection to the network increases — along with notebook and handheld PC sales — so will the hunger for wireless, analysts said.

"Nineteen ninety-seven was the year of wireless apathy," said Bob Egan, an analyst at Gartner Group, Inc., a consultancy in Stamford, Conn. "[This year] will be the year of wireless data awareness, and 2000 is wireless data adoption."

COMING SOON

Egan predicted that Cellular Digital Packet Data (CDPD) services will emerge from the jumble of confusing, proprietary services to dominate the corporate market in the short term. To date, CDPD has only about 7,000 users.

The CDPD network overlays the cellular voice network to provide a wireless extension of packet data networks. Connectivity is at 19.2K bit/sec., with throughput of 9K bit/sec., and is based on the industry-standard Internet Protocol, so applications can be easily integrated to a wireless wide-area network.

Competing services include ARDIS, which offers 9K bit/sec. throughput, and RAM Mobile Data, which offers 6K bit/sec. throughput.

To make CDPD more affordable, Bell Atlantic Corp. is offering a CDPD wireless data service, which includes unlimited Internet and electronic mail, for $49.95 per month.

But that excludes the high cost of wireless modems, which range in price from $200 to $800, compared with about $200 for the average PC modem card.

AT&T Wireless, GTE Corp. and Ameritech Corp. also offer CDPD services.

"The CDPD network is pretty ubiquitous, and [providers] are making it easier for corporations to move over," said Stephen Lee, a wireless analyst at Deloitte & Touche Consulting Group in Vancouver, British Columbia.

WIRELESS HOPEFUL

But a new service, called local multipoint distribution service (LMDS), holds promise for speeds way beyond those of CDPD, Lee said.

LMDS, available in limited areas of New York from CellularVision USA, Inc., uses high-frequency radio waves to transmit data at up to 45M bit/sec. The Federal Communications Commission is currently auctioning off LMDS licenses.

The service will likely compete with Digital Subscriber Line, which uses existing copper phone wire, and other wireless technologies. □

HOW WIRELESS SERVICES STACK UP

Nonwireless		Wireless	
10Base-T	10M bit/sec.	Metricom	30K bit/sec.
ISDN	128K bit/sec.	Cellular dial-up	14K bit/sec.
Dial-up telephone	33K to 56K bit/sec.	CDPD	9K bit/sec.
		ARDIS	9K bit/sec.
		RAM Mobile Data	6K bit/sec.

Ex-employee nabbed in $10M hack attack

▸ *Omega Engineering revamps security after 'logic bomb' wipes out entire system*

By Laura DiDio

A FIRED engineer doubling as his company's network administrator acted out corporate America's worst security nightmare when he allegedly launched a logic bomb that wiped out all of the firm's software, inflicting $10 million in damages.

Could it have been prevented? Maybe.

Could the damages and downtime have been minimized through better security procedures? Definitely.

That's the assessment of security experts and executives at the company in the wake of last week's indictment of 30-year-old Timothy Lloyd, the former chief computer network program designer and network administrator at Omega Engineering, Inc. in Bridgeport, N.J.

Omega is a privately held company that makes high-tech measurement and control instruments for government agencies such as NASA and the U.S. Navy. It has 1,000 employees worldwide.

The two-count indictment handed down in U.S. Federal District Court in Newark, N.J., charges that on July 30, 1996, "Lloyd intentionally caused irreparable damage to Omega's computer system by activating a logic bomb that permanently deleted all of the company's sophisticated software programs." A logic bomb is a malicious program that is set to trigger at a particular time.

Lloyd did not return several telephone calls.

"Omega is the classic situation of an inside hack attack, in this case a 'drop dead logic bomb' that detonates at a specified time and implodes the network. They are the most difficult to defend against," said William Cook, a partner at Brinks Hofer Gilson & Lione, a Chicago-based law firm.

That is exactly what happened, said Al DiFrancesco, Omega's director of human resources. "Three weeks after Lloyd was fired, our employees came to work and couldn't boot their computers," he said.

The company quickly discovered that all the network files were gone.

Like many victimized businesses, Omega had thought it had adequate security mechanisms in place. It had backup, recovery and audit software installed.

Those audit trails did lead back to Lloyd and resulted in his indictment, DiFrancesco said. And Omega did cancel all of Lloyd's access rights and privileges when he was terminated on July 10.

So what went wrong?

For starters, besides being Omega's chief computer network program designer, Lloyd was also the company's network administrator.

And his 11 years on the job meant that he knew the ins and outs of the system and had all the supervisory privileges to make network additions, changes and deletions.

DiFrancesco said Lloyd used his knowledge to embed and encrypt the logic bomb within the Novell, Inc. NetWare operating system and disable the backup and recovery facilities.

OPENED EYES

In the wake of the damage caused by the logic bomb, Omega has installed a state-of-the-art security system, and the company will no longer put all its eggs in one basket.

"We're making sure we duplicate all of our database information, software code and files and will also store them off-site," DiFrancesco said.

Lloyd's trial is set to begin April 20 in U.S. District Court in Newark.

If convicted, he faces a maximum five years in federal prison on the hacking charges and another 10 years if convicted of stealing $50,000 worth of Omega's computer equipment.

Each count carries a maximum fine that could range from $250,000 to twice the loss or gain of the crime, the U.S. Attorney's office said in a statement. □

BE PREPARED

How to protect your corporate data from hackers:

- Turn audit trails on
- Request trap and tracing from your local telephone company
- Consider installing Caller ID
- Make backups of damaged or altered files
- Maintain old backups to show the status of originals
- Designate one person to secure potential evidence
- Evidence, such as tape backups and printouts, should be secured in a locked cabinet with access limited to one person
- Keep a record of resources used to re-establish the system and locate the perpetrator

Source: FBI's National Computer Crime Squad, Washington

If computing costs

are burdening

your company,

we'd like to offer you

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FRANKLY SPEAKING

IS and the big picture

FRANK HAYES

JUST WHEN I THINK I've heard every possible bit of bizarre news on the IS hiring front, I turn over a rock and discover another tidbit or two to drive us all crazy.

For example, did you know that many of the best and brightest computer science graduates aren't going into the information technology industry at all?

These young wizards won't land in corporate IS shops or even work for software vendors. Instead, they're being snapped up by financial firms, which have discovered they make great securities analysts and traders — at salaries most IS people only dream of.

That's especially true of computer science graduates who also studied business management, according to placement people I talked to recently at several top tech schools.

So-called "techno-MBA" programs were designed to turn out IT people who understand both technology and how it can make a business work better. Corporate IS shops desperately want people like that as the screams get louder to align IS with business needs.

Instead, it looks like the very people we need are headed to the money pits instead.

Think that's insane? Then consider this. Everybody knows that techies don't care much about business, right? Any IS manager will tell you that it's technology, not business value, that makes a techie's propeller go 'round.

Your workers want to make a difference in the bottom line.

There's just one trouble with that truism: It's not true.

According to *Computerworld*'s 1997 Job Satisfaction Survey, 37% of IS employees said they'd be happier if they had the opportunity to contribute to business goals.

That puts contributing to the business ahead of getting a promotion or IT training on the job-satisfaction scale — and just behind performance bonuses and the chance to use new technology.

It's as if your techies are saying, "What we'd really enjoy is making all our customers happier, all our shareholders richer and our fellow employees more successful. Delivering business value — that's what would make us happy."

Their desire to make a business impact isn't really so crazy. The horizons of many IS staffers have grown narrower and narrower, the skills required more and more specialized. They've been relegated to the role of high-tech mechanics and janitors, keeping the plumbing connected and the wastebaskets emptied, but not much more.

They know that some nontechnical managers are actively working to marginalize IS — and they don't want to be marginalized. They want to see the big picture and make a difference in the bottom line. They want to matter.

How can you help make that happen? A good start is by putting developers and network managers face-to-face with users so they can see exactly how their systems are used for business advantage. Unfortunately, in some IS-hostile organizations, that's politically impossible.

But how about pairing technical specifications with business requirements for every project? When developers understand what an application is supposed to do for the business, they can make better — and more appropriate — technical decisions.

Or try adding your network managers to the help desk rotation. That gives them the chance for clear, unfiltered feedback on how things are running — and why it matters to the business.

Even just asking IS staffers how they think they can increase their impact on the business can produce surprising results. You may find there's a lot more business expertise in your shop than you ever expected.

But do something to leverage that desire among your IS people to make the business work better. Letting it go to waste would be the craziest idea of all. □

Hayes is Computerworld's West Coast bureau chief. His Internet address is frank_hayes@cw.com.

SHORTS

FedEx continues Java NC tests

Federal Express Corp. will stick with plans to test Java-based network computers as the company's thin client of choice, contrary to a report published last week. The report suggested FedEx was dumping network computers, including JavaStations from Sun Microsystems, Inc., in favor of Windows PCs. But Dennis Jones, executive vice president and chief information officer, said the company would continue a five-year testing program of thin clients. "We believe that thin-client technology will play an important part in the future, including Java NCs," Jones said. With dipping PC prices and turmoil in the network computer market, FedEx sees PCs as the best client choice now, he added.

Chase bank names CIO pair

The Chase Manhattan Bank Corp. has named two chief information officers to run its wholesale and retail banking operations as part of a continuing management overhaul. Carl Morales, 54, has been named CIO for the New York-based bank's retail arm, called the National Consumer Services division. Rick Mangogna, 58, has been appointed CIO for Chase's Global Bank group, the bank's wholesale banking business.

States to meet on Microsoft

Prosecutors from at least six states are expected to meet this week with U.S. Department of Justice officials to discuss their respective antitrust investigations against Microsoft Corp. Eleven states are known to be probing the Redmond, Wash.-based software maker. Microsoft has said it is cooperating fully with the investigations. In related news, a Texas District Court judge last week rejected a complaint that Microsoft's nondisclosure agreements interfered with that state's investigation of the company's business practices. Also, the Justice Department has subpoenaed executives from America Online, Inc. and MCI Communications Corp. as part of its antitrust probe of Microsoft.

Gates, Barksdale to testify

It looks as if the Senate will have a hearing after all. After saying he had a prior commitment, Microsoft Corp. CEO Bill Gates rearranged his schedule so he can attend a March 3 Senate Judiciary Committee hearing on changes in the software industry. Netscape Communications Corp. CEO Jim Barksdale also has committed to make the trip to Washington. Sun Microsystems, Inc. CEO Scott McNealy still is considering his invitation.

Antispam bill advances

The Washington House of Representatives last week passed a bill that would make it a crime to knowingly send unsolicited electronic mail to a Washington state resident or to forge "headers" in the "from:" field in a commercial E-mail. The bill is now headed for the state Senate. Nevada already has an antispam law, and several other states — including California — have bills pending.

Adaptec buys Symbios

Adaptec, Inc., a bandwidth management vendor, has agreed to acquire storage maker Symbios, Inc. for $775 million in cash. Symbios, in Fort Collins, Colo., is a subsidiary of Hyundai Electronics America that recorded $620 million in revenue last year. Tom Lahive, an analyst at Dataquest in Westboro, Mass., said the merger broadens Milpitas, Calif.-based Adaptec's product line while infusing Hyundai with some sorely needed cash. Hyundai's Korean parent company has suffered in the Asian financial crisis.

Cybermedia: Oops, sorry

Cybermedia, Inc. issued an apology to Netscape Communications Corp. for a glitch in its First Aid 98 self-help PC software. The glitch changed a user's default Internet browser from Netscape's Navigator to rival Microsoft Internet Explorer. Cybermedia, in Santa Monica, Calif., said it fixed the problem and is offering a free updated version of the software that can be downloaded from *www.cybermedia.com*.

SHORT TAKES

Management software vendor **Platinum Technology, Inc.** in Oakbrook Terrace, Ill., said it will buy the Mastering, Inc. training organization in a deal worth about $138.7 million. ... U.S. House Republicans plan to introduce next month a revised bill to boost private outsourcing of services by federal agencies. ... **Sybase, Inc.** next month plans to announce a data warehousing bundle built around its Adaptive Server IQ decision-support database and metadata management software that it bought two weeks ago. Slated to ship in the second quarter, the bundle will target data warehouses up to 100G bytes. ... **Network Associates, Inc.** in San Jose, Calif., this week will unveil network management product plans resulting from last year's merger between **McAfee Associates, Inc.** and **Network General Corp.** ... David Douglas, until 1996 CIO at PepsiCola International, has been named chief operating officer at **Cognitive Communications, Inc.**, a New York intranet strategy and application development firm.

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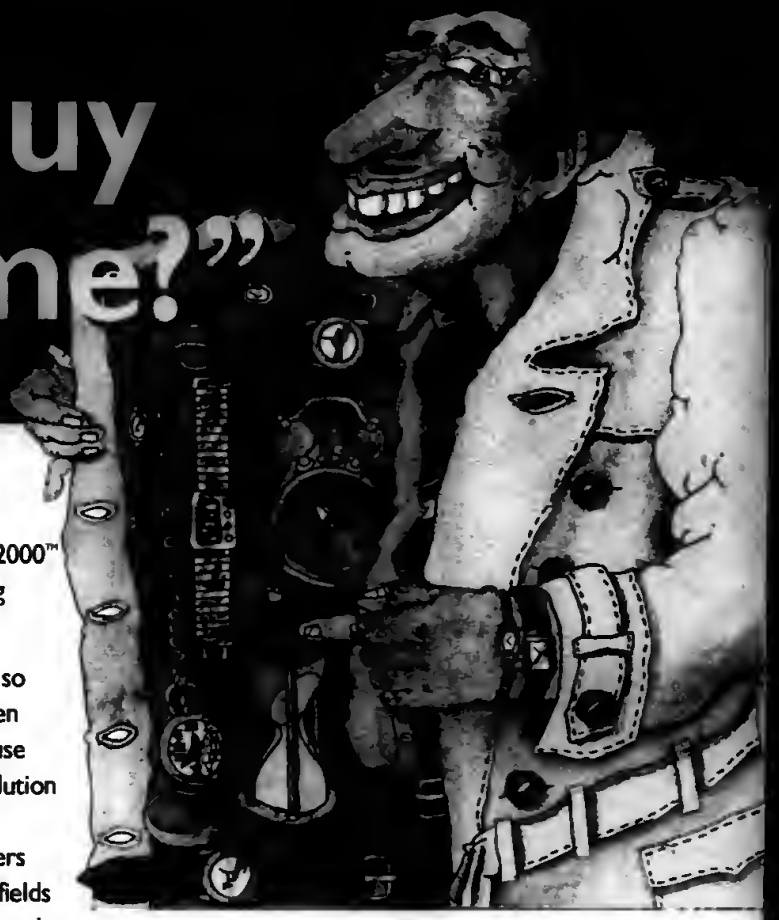

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Denial stalls disaster recovery plans

By Thomas Hoffman

FIVE YEARS AGO this week, a terrorist bomb exploded in a parking garage in New York's World Trade Center, injuring dozens of people and bringing business to a standstill. The aftermath of the bombing displaced thousands of workers for weeks and ultimately forced 150 companies out of business.

Despite the grim reality of the World Trade Center bombing and more recent disasters — including the ice storms that shuttered Canadian businesses last month and the El Nino-influenced flooding that continues to swamp hundreds of California businesses — many companies remain complacent about enacting effective disaster recovery plans.

According to a 1993 survey of 200 senior executives at companies with average annual revenue of $2.5 billion, 41% didn't have a disaster recovery plan in place at their organizations. By last year, that figure had grown to 55%. Comdisco, Inc., a Rosemont, Ill.-based disaster recovery vendor, launched the study.

Disastrous storms and man-made events such as the April 1995 Oklahoma City bombing have made people more conscious about disaster planning, "but I think there's still a dangerous attitude of, 'It won't happen to me,' " said Lloyd R. Smith Jr., president of Business and Government Continuity Services, Inc., an Oklahoma City-based disaster prevention consultancy.

Fiduciary Trust Company International in New York moved 450 employees to Comdisco's North Bergen, N.J., facility after the World Trade Center explosion and couldn't return to the Twin Towers for three weeks.

"... there's still a dangerous attitude of 'It won't happen to me.' "

— Lloyd R. Smith Jr.
Business and Government Continuity Services, Inc.

"If we didn't have a remote site, we would've gone out of business," said David Stone, executive vice president and director of operations at Fiduciary Trust, an investment firm that manages $39 billion in assets.

Since the bombing, Fiduciary Trust has set up T1 and T3 connections to Comdisco to mirror the Oracle Corp. and other company databases that contain information about 8,000 institutional and retail customers. Fiduciary Trust didn't lose any business from the bombing — in fact, it even picked up a large institutional client that was impressed with the company's resiliency, Stone said.

INSURANCE COVERAGE

Fortunately, insurance covered the $1 million to $5 million Stone said Fiduciary Trust had to spend to replace a few hundred PCs, clean and restore data center equipment and cover other disaster-related costs.

"I think we take the disaster recovery process far more seriously now," he said.

But disasters that destroy real estate aren't the only kind. In December, a U.S. Congressional Banking Committee issued a report that scolded the U.S. financial services industry for not protecting its data from saboteurs, given the rise in Internet-based electronic commerce.

The report estimated that the U.S. financial services sector risks losing up to $2.4 billion per year in annual business from computer attacks.

Smith recommended securing data physically and electronically. He also recommended that users secure any areas that expose heating, air conditioning and power supplies, to which saboteurs can gain easy access; restrict access to parking garages; and secure loading docks. □

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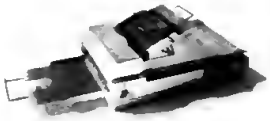

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Users salivate for speedy DSL links

▸ *Consumer interest is there, but technology isn't*

By Matt Hamblen

TELEWORKERS and remote office workers want lightning-fast access to the Internet, which makes the allure of high-speed Digital Subscriber Line (DSL) technology all the greater.

But in interviews last week, network managers said they wonder when they can really get their hands on DSL from their carriers, even for a trial with a small group of remote workers.

INTERNET ACCESS

All the large telecommunications carriers have DSL trials under way and some have been marketing to consumers in the past six months. But none has announced that any business customers are adding DSL to a remote access menu for their workers, analysts said.

US West, Inc. in Denver is probably the most aggressive of the carriers in targeting consumers with DSL, boasting some 30,000 customers, analysts said.

Some varieties of DSL technology offer speeds as low as 192K bit/sec., and others promise connections as fast as 9M bit/sec. All use the copper wires available nearly everywhere and don't need repeater devices.

"There's widespread frustration with slow Internet access, so there's definitely a growing interest in DSL," said Gaston Best, connectivity engineer at Travelers Property Casualty in Hartford, Conn. "I had to do a 10M-byte download for a software upgrade at home recently that took three hours at 22K bit/sec., and that's just ridiculous."

Best said that kind of frustration will drive network managers to look into DSL. He expects a DSL trial at his company within a year but hasn't heard any solid plans from carriers to provide it.

Ron Thornhill, vice president of network services at MasterCard International, Inc. in St. Louis, said business partners at banks and stores that seek large files of credit information from a secure MasterCard World Wide Web site will need fast Internet access.

DSL equipment vendors have recently announced products that have heightened interest in the technology.

Last month, the Universal Asymmetric DSL (ADSL) Working Group was formed to create an open international standard. The group comprises 50 companies, including Microsoft Corp., Intel Corp., Compaq Computer Corp. and many carriers.

T1 AND T3

But many companies may find that T1 or T3 access to the Internet from a remote campus will still be preferable to ADSL, which sends information downstream much faster than upstream, analysts said.

What will eventually drive DSL's success for large businesses is companies "that want faster access at a reasonable price for remote workers or teleworkers where they wouldn't dream of providing a T1," said Paula Reinman, a consultant at TeleChoice, Inc. in Verona, N.J.

"It remains to be seen how successful ADSL or another flavor of DSL is, but DSL is the most exciting thing happening [for fast access], and it's something network managers should be paying attention to," said Abner Germow, an analyst at International Data Corp. (IDC) in Framingham, Mass.

The market for DSL equipment is still in its very early stages but is expected to reach $1 billion in five years, according to IDC.

The big explosion in the market might occur next year, analysts agreed. Chips for those new modems will be announced early this year, and newer DSL modems and other equipment are expected later in the year.

Some ADSL consumer plans are listed at $400 to $500 for an installation and $40 to $60 per month for unlimited use, said Randy Carlson, an analyst at The Yankee Group in Boston. By comparison, Pacific Bell sells a small business Integrated Services Digital Network connection that costs $363 for an installation and $60 per month for up to 30 hours, plus $1 for each additional hour. □

DOWNSTREAM DATA RATES

ISDN	56K to 128K bit/sec.
XDSL	192K to 9M bit/sec.
Cable modems	500K to 3DM bit/sec.

Source: Walsh-Lowe & Associates, Inc., Hoboken, N.J., and TeleChoice, Inc., Verona, N.J.

Metering tools find second life as monitoring tools

By Gordon Mah Ung

HARRIS CORP. uses metering to determine which applications users are accessing. A division of Hoechst Celanese Corp. uses metering tools to see which custom clients it should pay to have rewritten.

Those uses and others are signs that metering tools still have a place in information systems departments, even though the most prevalent application of metering devices, concurrent licensing, went away when Microsoft Corp. ended its concurrent licensing program.

Metering tools can:

- Help administrators limit access to games or browsers
- Give detailed reports on what applications are being used
- Keep companies in compliance with licenses

Concurrency allowed organizations to buy licenses for only the number of people who would use applications.

For example, a company that has 1,000 computers might buy licenses for only 250 and then limit the application with metering software.

But Microsoft scrapped that program.

OTHER USES

"We're using metering tools for other things," said Lisa Barahal, a systems engineer at Harris in Melbourne, Fla.

Harris, an international $3.6 billion communications, electronics and IS company, uses metering tools to get a better idea of what its users' needs for applications will be. Harris uses Tally Systems Corp.'s CentaMeter product.

Barahal said metering tools can also be used to limit employees from playing games. Some software vendors go so far as to accept payment based on the reports that metering tools generate.

MONEY SAVER

At the chemicals division of Celanese in Dallas, metering also is likely to continue. "We're looking at it from a business perspective," said Shane Walden, desktop LAN services manager at Celanese. "We're definitely being smarter with our money."

Walden said that for information technology departments to make solid decisions, they need to know what employees actually use.

That can be accomplished with metering tools. Walden said one such example is the division's transition to a full 32-bit environment.

"What's the business justification of converting a 16-bit app to a 32-bit app?" Walden said. Instead of spending money to convert all 16-bit clients, Celanese used CentaMeter to monitor which clients were being used and when.

Walden said that has helped Celanese make sound business decisions on where to spend money and resources.

Metering tool vendors are continuing to produce products. Funk Software, Inc. in Cambridge, Mass., recently updated its AppMeter product to support both 32-bit Windows applications and Novell, Inc. NetWare products.

"The main idea behind application metering is to enable network administrators to get a very good idea of what the usage patterns are on the network and meter them accordingly," said Joe Ryan, a vice president at Funk. □

TME FRAMEWORK

Tivoli hones its OS/390 management

By Patrick Dryden

TIVOLI SYSTEMS, INC., trying to get its enterprise management software to control everything from the desktop to the data center, is improving TME 10's mainframe management capabilities.

The IBM subsidiary released eight modules for the OS/390 operating system environment last week. Each module offers a World Wide Web-based graphical user interface, more automation and better integration with TME 10's core services and plug-in tools.

One new module supports MQ Series transactions. The seven others track use statistics, control jobs involving the host and distributed systems, monitor network performance, secure Internet connections and help manage storage.

BEYOND BASICS

"It's nice to know they are bringing the loose ends in to the TME 10 framework," said Larry Dial, senior systems integrator at Barnett Banks, Inc. in Jacksonville, Fla.

The enhancements are nice, Dial said, "but we're still getting all the basic system and network management under our belt."

Another Tivoli user, the Student Loan Marketing Association (Sallie Mae) in Washington, has been managing client/server systems with TME 10. Now the financial services organization is replacing its third-party OS/390 management products with Tivoli products.

Migrating to Tivoli's software will save about $1 million each year in license fees alone and will enable managers to meet whatever challenges arise on host or distributed systems, said Israel Gotay, vice president of technical services and data center operation at Sallie Mae.

Austin, Texas-based Tivoli is trying to grease the wheels for such upgrades by offering the services of the Tivoli Migration Team. That group has handled 700 product migrations so far, officials claim. Within two to five months, the group can help replace competitors' software or upgrade existing IBM and Tivoli tools. □

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Chamber self-funds outsourcing

CONTINUED FROM PAGE 1

also signed on for 10 years, which few companies do anymore.

"A self-funding outsourcing deal results in no increase to a company's budget, as projects are funded from the cost savings resulting from using outsourcing services," said Lisa Maio Ross, a senior outsourcing analyst at International Data Corp (IDC) in Framingham, Mass. "They're fairly unique."

The 1,000-employee Chamber had a nearly $7 million annual budget for IS and communications and employed a 60-person IS staff, of which Edward Zier is the sole survivor.

It sounded like a perfect fit for the Washington-based Chamber.

"It was our goal to only pay over the term of the contract what it would've cost us to keep things the way they were," said Edward Zier, vice president of operations at the Chamber. "That's the only way we would go with outsourcing."

Financial constraints as well as a staffing shortage played large roles in the Chamber's decision to outsource its entire information technology infrastructure.

The 1,000-employee Chamber had a nearly $7 million annual budget for IS and communications and employed a 60-person IS staff, of which Zier is the sole survivor. Some employees were hired by Cap Gemini, some left, and the remainder were laid off.

"We realized we'd face an uphill battle in hiring and retaining a technical staff to build, operate and maintain a modern IS infrastructure," Zier said. "It just wasn't going to happen."

It was concerns about the Chamber's ability to prepare for the year 2000 that got Zier interested in the outsourcing option as far back as mid-1995.

"We realized that just the cost of examining programs was going to be very high," Zier recalled. "We had it pegged at $2 for each of our 5 [million] to 6 million lines of code. And that didn't include solving the problem. It didn't make good sense to do it ourselves."

MORE CHALLENGES

But the year 2000 conversion was only one major challenge the Chamber faced: It realized it would need to "reinvent" its computer system to give its national sales force the capabilities it needed to provide a higher level of service to its customers.

"The old system did not allow us to effectively integrate information systems," Zier said. "We had smokestack applications that stood on their own, which made it very difficult for staff to assemble a comprehensive picture of a member."

The Chamber runs membership, subscription, financial, customer service and fulfillment applications on an IBM mainframe that uses terminal emulation to support 12 offices nationwide. It had only 300 PCs and a few LANs, none of which were connected.

BYE-BYE, BIG IRON

Cap Gemini will unplug the mainframe and replace the vintage applications with all-new Oracle Corp. applications — several of which are custom-built — on two Hewlett-Packard Co. 9000 high-end servers. The outsourcer installed more LANs and linked them using frame-relay connections.

The new IT infrastructure will enable the Chamber "to demonstrate the value of its memberships by letting members know how we have addressed their business concerns," Zier said. "By knowing more about the member, we can also improve customer service by answering questions faster."

That is difficult now because there is only limited integration among the Chamber's lifeblood applications.

Cap Gemini has a big job ahead of it, Zier said.

"They have to take the Wright brothers' airplane and rebuild it while it's in flight to become a modern jetliner," he said.

Cambridge Technology Partners, Inc. faces a similar job. Rental truck company Ryder TRS, Inc. recently detailed plans to outsource virtually everything to do with IS — including its chief information officer — to Cambridge Technology and Perot Systems Corp. Ryder will retain only project management responsibilities [CW, Feb. 9].

But analysts don't see a trend developing.

Among large organizations, the Chamber's outsourcing of virtually all computer and network services to a single vendor is the exception rather than the rule, said Jeffrey Cohen, who heads KPMG Peat Marwick LLP's Chicago-based outsourcing practice. What's more typical is for companies to build in competition by contracting with different outsourcers for different services, such as network management or applications development, Cohen said.

The multiple providers are in turn managed by either the CIO or, in a growing number of cases, by a three- to four-person vendor management group whose sole job is to track service agreements, renegotiate prices and generally keep tabs on all aspects of the various outsourcing agreements.

"I haven't seen a trend of companies going full-service to one vendor," Cohen said. □

The U.S. Chamber of Commerce chose outsourcing because "we realized we'd face an uphill battle in hiring and retaining a technical staff to build, operate and maintain a modern IS infrastructure," says Edward Zier, vice president of operations

Out on an outsourcing limb

Analysts expressed some concern that the U.S. Chamber of Commerce chose Cap Gemini America over several more established U.S.-based outsourcers. Edward Zier, vice president of operations at the Chamber in Washington, wouldn't name those outsourcers.

"What the Chamber is doing is putting its full trust in Cap Gemini's ability to handle so many systems and operations even though I don't think they've ever handled anything like this in the U.S.," said Lisa Maio Ross, a senior outsourcing analyst at IDC. "Most of what Cap Gemini has done has been application outsourcing. And they don't have a long track record of full-scale outsourcing contracts."

Zier serves as the Chamber's liaison to Cap Gemini. A committee composed of four Chamber officials and chaired by Zier provides oversight and guidance to Cap Gemini. "We didn't just throw all this over the wall to them and wash our hands of it," Zier said.

These days, 10-year outsourcing deals such as the Chamber's are infrequent — and where they do exist, there is sure to be plenty of wiggle room built in. "In any 10-year deal, regardless of what the contract says, you'll see renegotiations and changes," said David Sewell, a business development executive at Dallas-based outsourcer Perot Systems. — Bob Wallace and Julia King

IntranetWare for SAA adds more users, open protocols

By Laura DiDio

NOVELL, INC. and IBM last week introduced a version of IntranetWare for Systems Application Architecture (SAA) aimed at reducing the time and cost of managing connections to IBM mainframes and AS/400 systems.

IntranetWare for SAA 3.0 will let businesses support up to 5,000 concurrent user sessions — up from 3,000 in the previous version of the product.

And Version 3.0 allows businesses to print mainframe documents directly to networked printers through its integration with Novell Directory Services (NDS).

But users and analysts said the product's biggest advantages by far are its improvements to TCP/IP and support for the Service Location Protocol.

New TCP/IP capabilities include first-time support for Telnet 5250 terminal servers, hot standby and backup features and load balancing.

IntranetWare for SAA 3.0 uses the industry-standard Service Location Protocol to replace Novell's proprietary Service Advertising Protocol for LAN-to-host data transmissions.

"Getting rid of [Service Advertising Protocol] helped to relieve traffic congestion on the wire between our intranets and mainframes," said Dave Meixner, a network engineer at National City Bank in Cleveland, which has 5,000 users and branch offices in six states.

STORMY WEATHER

When it used IntranetWare for SAA 2.2, the bank experienced broadcast storms about once every four to six weeks. "But when they hit, they were bad. Performance turned to molasses. Since we started testing IntranetWare for SAA 3.0, we've had no problems," Meixner said.

Meixner and Paul Boserup, a network analyst at BonSecours Health Systems, Inc. in Fort Myers, Fla., both said they were pleased with the connectivity package's integration with NDS. Meixner said the ability to use NDS to manage host-connectivity data transmissions has halved his administration time.

"It reduces my management tasks and eliminates bindery replication traffic on the network. Our administration time is at a premium, and the integration with NDS lets me concentrate on other network and computing issues," Boserup said.

IntranetWare for SAA 3.0 ships this month. Pricing ranges from $3,095 for a 25-user license to $69,595 for a 1,000-user license. □

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'net used to extend EDI reach, cut costs

CONTINUED FROM PAGE 1

World Wide Web browser instead of submitting more costly paper and fax forms.

"Our customers are telling us they're seeing processing cost reductions of between 30% and 40%," said Laura Longcore, senior manager of electronic commerce at Boise Cascade. "It's saving money on both sides. It's truly a win-win for our customers and ourselves." Only 2% of Boise Cascade's order entry is done via Internet. But officials said they hope to increase that to 6% to 10% by year's end.

The Internet will "reduce errors, it's easier to use, and it allows orders to be placed one time."
— David Wallace, Zellerbach

Boise Cascade isn't alone in taking the Internet EDI plunge. Analysts said more and more companies with large investments in EDI-based systems are turning to the Internet to reach customers and business partners that have resisted EDI because of its expense and complexity.

A recent Forrester Research, Inc. survey of 50 Fortune 1,000 companies showed that nearly half plan to do EDI over the Internet by the end of the decade. By late last year, 8% were already moving to Internet-based EDI, another 12% were piloting systems and 32% were considering them, according to the report from the Cambridge, Mass., researcher.

The companies polled said an average of 16% of their traffic will move from value-added networks (VAN) and leased lines to the Internet by decade's end.

A company typically spends $55 to process a purchase order. Traditional EDI can reduce that cost to about $2.50 per order, and Internet-based EDI could reduce that further — to less than $a per order, said Forrester analyst Steven Bell. For a corporate EDI user with a high volume of transactions, that can mean savings of $200,000 to $300,000 per year, Bell said.

Some EDI participants are turning to Internet-based systems to eliminate the costly VANs they pay for network transport, translation and routing of EDI messages into their legacy processing systems.

Estimates for Internet commerce growth

Source: International Data Corp., Framingham, Mass.

ALTERNATIVE

But more often, companies have their Internet-based orders transmitted to a VAN or service provider that translates the data into an EDI format and sends it to their host computers. The Internet simply serves as an alternate transport mechanism to a more expensive leased line.

Most EDI users will take the latter approach within the next 12 to 24 months, said Erica Rugullies, an analyst at Giga Information Group in Cambridge, Mass. They won't let the Internet replace VANs or leased lines to any degree for two to three years, Rugullies said.

Dependability and speed are holding back Cummins Engine Co. from connecting with its major trading partners via a Web-based system, said Edward Hubbard, director of electronic commerce at the Columbus, Ind., company.

"It would take days for us to receive orders from large customers over the Internet," Hubbard said. "With a large automotive customer, it takes a couple of hours to receive an order now over a high-speed line."

Cummins plans to stick with dedicated lines for its large customers and suppliers but in the future hopes to let small customers and suppliers enter low-volume transaction data over the Internet. The company is testing an Internet system with two distributors.

Zellerbach, a paper, packaging and industrial supplies distributor, plans to go live next month with its Internet-based order-entry system in response to customer demand. The Miamisburg, Ohio, company, a division of Mead Corp., deals with more than 100 trading partners via its traditional EDI system.

But Zellerbach officials said they hope the Internet will enable the company to double its number of electronic trading partners by year's end.

"We think both our customers and ourselves will save money. It'll reduce errors, it's easier to use, and it allows orders to be placed one time, then electronically transmitted into the system," said David Wallace, Zellerbach's manager of customer technology solutions. □

Bullish 'net view bolsters businesses

By Sharon Machlis

WALL STREET analysts are bullish on the electronic-commerce market, forecasting an average growth rate of 30% this year.

That has propelled stocks for major players such as Sterling Commerce, Inc. to new 52-week highs. "I was very, very pleased with what they showed in the first quarter," said Richard Park, an analyst at Merrill Lynch & Co. in San Francisco.

Sterling's revenue rose 42%, and profit was up 51% compared with the year-earlier quarter. The firm is considered a leading player in offering business-to-business electronic-commerce software and services.

Park said he expects the Dublin, Ohio, company to post nearly $500 million in sales this year, up from $350 million in 1997. "I think the whole electronic-commerce market is attractive," he said.

Investor interest in some smaller vendors, meanwhile, rocketed this month: BroadVision, Inc.'s stock jumped 92% from the beginning of the month through last Thursday's close, while Open Market, Inc. stock rose 46%. BroadVision makes software for personalized electronic commerce, and Open Market provides software and services for World Wide Web-based retailing.

E-COMMERCE ADVANTAGES

Top benefits of electronic commerce cited by business customers

Decreased overhead costs from interfacing to back-end functions	61%
Increased sales from better product targeting	43%
Faster turnaround times for transactions	39%
Lower costs from channel bypassing	26%

Base: 23 leading electronic-commerce software and service providers; multiple responses allowed

Source: Information Technology Association of America, Arlington, Va.

Most vendors said the market for business-to-business electronic-commerce products and services could double within the next six months, according to a survey by the Information Technology Association of America and Ernst & Young LLP.

"Is it going to double? I don't know," said Rand Hammond, a partner in Ernst & Young's Dallas-based electronic-commerce assurance practice. "Is it going to be significant? Yes."

Electronic transactions with suppliers and customers are saving time, cutting costs and allowing some companies to move into new markets, Hammond said. "Businesses are discovering that it's more than just an add-on, static [public relations] Web page, but building something into their core business processes," he said. □

BellSouth, EDS team on services

▸ *Outsourcing venture targets WANs, E-commerce*

By Julia King

STARTING THIS SUMMER, midsize corporations in the South will be able to outsource their wide-area data networks and electronic-commerce operations to a joint venture of Electronic Data Systems Corp. and BellSouth Corp.

Under a five-year strategic alliance announced last week, the companies said they have together invested 250 people and $50 million to bring services — including custom electronic commerce, help desk and groupware management — to customers in BellSouth's nine-state region.

BellSouth and EDS say the market for managed network services in BellSouth's region is $2.7 billion. They expect it to be $10.7 billion by 2002.

The joint venture targets companies with 500 to 10,000 employees.

Analysts said the deal benefits BellSouth's smaller corporate customers, which will have access to both network infrastructure and applications management services from one vendor.

The services will be rolled out to select customers over the next few months, officials said. And general availability is scheduled for midsummer, they said.

Plano, Texas-based EDS previously had targeted its computer and network services at large corporations exclusively. The alliance with BellSouth — which analysts expect will be followed by deals with other regional telecommunications carriers — marks the outsourcer's entry into the middle market.

With EDS's move into the midsize corporate market, a company can now "basically be a small fish and enjoy a big aquarium," said George Logemann, an analyst at The Yankee Group in Boston.

EDS and BellSouth have set up a Managed Network Services Alliance office in Atlanta to handle the business. □

MANAGEMENT STRATEGIES

Warehousing exacts business change

CONTINUED FROM PAGE 1

works in corporate marketing. "We've truly changed how we're managing the business."

A half-dozen other business and technology managers sounded a similar refrain last week at a warehousing conference here.

Their companies aren't just using data warehouses to put better information in the hands of end users, they said. Data warehouses are changing the way business gets done.

To get ready for its new approach, First American set up teams to study customer profitability and revenue growth issues. Sales force incentives were changed, and a sales training firm was brought in to help workers make the transition. All that, plus development of the data warehouse, was done in phases that had to pay for themselves from the get-go, Beach said.

American Century Investments in Kansas City, Mo., also plans to use a soon-to-be-finished data warehouse for targeted marketing, said Michael DePaoli, manager of customer information in the corporate marketing unit at the investment management company.

American Century wants to go from product-oriented marketing to homing in on groups of customers based on factors such as age and income level.

"We knew we needed a data warehouse to get it done," DePaoli said. Segmenting customers now is "almost impossible," he added.

The effects of data warehousing "can ripple out all the way to the front-line employees" who deal with customers, said Richard Rist, a vice president at The Data Warehousing Institute in Gaithersburg, Md., which sponsored the conference.

The prospect of changing business processes can pose sticky political questions inside companies, Rist added. "But many people don't realize there's going to be this issue until after they build a data warehouse," he said.

CONSOLIDATION

Sears, Roebuck and Co. is consolidating more than a dozen accounting procedures into one as it does a hand-in-hand implementation of a financial data warehouse tied to PeopleSoft, Inc.'s packaged applications.

"In a company our size, that's a very big deal," said Steve Beitler, assistant corporate controller at the Hoffman Estates, Ill., retailer.

Beitler said his staff has had to work hard to overcome concerns that business unit autonomy would be eroded by the project, which will start rolling out by midyear.

The benefits are expected to include a more integrated view of corporate finances and streamlined reporting that frees up store managers to spend more time "on the floor rather than sitting in an office," Beitler said.

MCI Communications Corp. in late 1995 began using its aT-byte data warehouse to drive marketing operations such as lead generation and campaign development. But its marketing department still is getting used to the new ways of doing business, said Dave Johnson, senior manager of systems development at MCI's mass markets telephone unit in Denver.

"We're thinking more on a customer basis than just designing a product and calling a lot of people to sell it," Johnson said. "It's a significant cultural change, and I think it's fair to say we haven't fully achieved that yet. But we're heading down that road." □

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AT A TIME LIKE THIS, THERE ARE SEVERAL THINGS YOU MIGHT FIND USEFUL.

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IBM hiring demand likely to exceed supply

By Patrick Thibodeau

AS IF FINDING information systems professionals wasn't tough enough, IBM intends to unleash a hiring juggernaut designed to add 18,000 employees worldwide this year — most headed to its quickly growing Global Services divisions.

Even if IBM achieves only a quarter of its hiring goal in the U.S., the impact on other companies still will be huge, employment recruiters said.

IBM and many other technology firms "want to hire at growth rates much faster than the supply [of workers] is increasing," said Stephen McMahan, managing director at Source Services Corp., an information technology, engineering and financial employment recruiter in Boston.

"It's going to drive up salaries even more, and it's going to make it harder for everybody to recruit," said Jim Trattner, who heads Trattner Network, Inc., a Los Altos, Calif.-based company that places high-tech contract professionals.

"These people just aren't floating around looking for jobs," he said. "Everybody in the technology field is employed, and there is a bidding war for people's skills and talents."

IBM employs 269,000 worldwide — about half that number, 137,000, in the U.S. The company, which hired 18,000 employees last year, isn't saying what percentage of the new hires will be in the U.S.

IBM IDEALS

IBM will look for employees with information systems skills, such as application design and development, and systems integration, a spokesperson said.

IBM Chairman Louis V. Gerstner announced this year's hiring goal at a White House ceremony Feb. 11, where the Armonk, N.Y.-based company received the Ron Brown Award for Corporate Leadership.

"These people just aren't floating around looking for jobs. Everybody in the technology field is employed, and there is a bidding war for people's skills and talents."
— Jim Trattner, Trattner Network

IBM's services division, which provides consulting, integration and outsourcing, contributes about $20 billion in annual revenue to the company, or about 25% of IBM's total revenue.

The services area has grown rapidly, partly because of the shortage of skilled IS workers at other companies, analysts said.

Although some IS professionals or recent college graduates may be attracted to IBM because of its reputation and the range of experience the company offers in the services area, IBM's employment casting call won't appeal to all.

"The ball's in your court. You can go anywhere you want," said Lynn Launer, general manager of High Tech Recruiters LLC in Langley, Wash.

Information systems workers are getting very selective about where they want to work, she said.

Some base their job search on the specific technologies they want to work with, while others may be interested in trying to get rich with a company that may go public.

Nationally, about 346,000 IT-related job slots are vacant — about 10% of the IT workforce — according to a study released last month by the Information Technology Association of America in Arlington, Va. □

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Users gravitate to "broken" software

By Randy Weston

THE NEWEST VERSION of SAP AG's R/3 software system is "broken." Same goes for The Baan Co.'s application package

But that is exactly what has attracted some early users to the products.

The latest releases of the popular software systems are broken into independent components rather than arriving as a single, integrated package. The goal is to make installation easier.

Currently, users are required to implement the entire package, then turn on what they need. The new releases will let users upgrade selected pieces instead of doing a complete upgrade.

"It is the right direction," said Mark Manuel, general manager of information services at Crown Equipment Corp. in New Bremen, Ohio. He is waiting for Baan to deliver functionality such as customer service management. With a component architecture, Crown could upgrade just the pieces it wants rather than the entire package.

As for making things easier, some early users said it was too soon to tell, but one said the new R/3 release has much cleaner code than earlier versions, which made for a quick implementation.

"The implementation has not been a major problem," said Patrick McGinty, director of information technology services at Texas Instruments, Inc.'s storage products group.

McGinty said he was warned against being an early tester of R/3 4.0 by other SAP customers who said the transition from Version 2.0 to Version 3.0 was difficult. "They told us to be careful and that we were crazy to do it first," McGinty said. "But so far, so good. That's what I'm telling people. It's gone very smoothly, and the system is easy to learn."

How SAP is breaking up its R/3 system:

- Early versions of R/3 shared a single database.
- R/3 is now being broken into components or independent applications. They are linked using SAP's Application Link Enabling (ALE) middleware, a messaging system that sends data between applications.
- Now, individual applications and corporate divisions can have their own databases or run different versions of R/3.

Baan is taking its component architecture a step further, at least from a marketing standpoint. Following up on its "evergreen" software concept, Baan last week announced its business process automation software will no longer carry release numbers.

The change means Baan V will forever be called Baan ERP, and users will be able to constantly update individual applications rather than the entire package.

Echlin, Inc., a $3.6 billion automotive parts manufacturer, is implementing Baan's application package globally. Bill Tilt, project director at the Branford, Conn.-based company, said the components will be helpful in implementing the system at Echlin's 140 sites on six continents. But the package also poses some systems management questions.

"For us to do a worldwide deployment of any product, we are going to have a delay in version upgrades," Tilt said.

Dennis Byron, an analyst at International Data Corp. in Framingham, Mass., said as more pieces of these systems are delivered, managing them will become a serious issue. It will be like buying a puzzle, one piece at a time.

SAP, in Wayne, Pa., and Baan, in Menlo Park, Calif., are scheduled to release the new software systems this spring. □

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E-mail's double-edged sword

▸ *Communication has never been easier — or more annoying*

By Barb Cole-Gomolski

IF YOU HAVE A love/hate relationship with your E-mail inbox, you aren't alone.

Office electronic mail has become the preferred way of staying in touch, but many still can't use it without ticking people off.

"The biggest issue these days is people who send large, attached files via E-mail," said Larry Magid, a syndicated columnist at the *Los Angeles Times*, who gets 100 to 200 messages per day.

"I was in London recently paying $1 a minute for a local call to connect to [my Internet provider], and [someone] sent me a 4M-byte file," Magid said. "It cost me money and time to receive it, and I wasn't pleased."

About 60 million Americans have E-mail access, according to Forrester Research, Inc. in Cambridge, Mass.

"Right now, the late adopters are getting E-mail," said Arnold Reinhold, co-author of *E-mail for Dummies*. "Every time you get a new wave of users, they go through the same learning curve."

Marian Paine is part of a team at General Electric Co. that answers E-mail queries about the company's appliances. Her main gripe about the medium that allows her team to field 15,000 questions per year is that "people don't share enough information for us to help them."

Apparently, a lot of us have yet to master the basics of E-mail etiquette (see graphic). The repercussions of a lapse in E-mail manners may be as trivial as annoying a colleague or a client. But they also could be grave.

"Everybody has at least three friends that are sending them the latest jokes on E-mail," Reinhold said. That is risky because some jokes may be offensive, he said.

Indeed, R. R. Donnelly & Sons Co. and Morgan Stanley & Co. both landed in court when employees sued over racially offensive E-mail that was passed among their co-workers. E-mail also has been the focus of lawsuits that involve breach of contracts and disclosure of corporate trade secrets.

Eric Arnum, editor of "The Electronic Mail and Messaging Systems" newsletter in Washington, is annoyed by "people who reply to a long message, including 100% of the sender's message, adding 'me too' or some other inanity at the top."

Spam is still Tom Tracey's biggest E-mail pet peeve. The technology officer at PNC Bank Corp. in Pittsburgh gets about 30 spam messages each week. He attributed the deluge to the fact that he freely posted his E-mail address in Internet newsgroups and kept the same E-mail address for many years.

Fed up, Tracey got a new E-mail address — nospam@bug.me.not.com — to use for Internet postings.

Another bugaboo is the "to" or "cc" list. "Some of my E-mail comes with several feet of fellow recipients' [names]," Magid said. "I guess the sender doesn't realize that they can use the blind carbon copy option to suppress that list."

Most E-mail devotees said they will continue to endure the minor E-mail glitches in the interest of improved productivity.

"I may be old-fashioned, but to me, almost all standards of E-mail etiquette mirror those of etiquette in face-to-face situations," said Stan Horowitz, senior consultant at Temple University in Philadelphia. □

E-mail's X-files

Marian Paine, who answers E-mail for General Electric, has seen it all. "We recently had a little lady with a 1952 refrigerator that's still running and has never had a service call," Paine said. "She wanted to know if there were any warranties left on it."

MESSAGING ETIQUETTE 101

- **Be concise.**
- **Be cautious when sending E-mail to foreign countries. They may have different perceptions of what's funny or appropriate.**
- **Virus-scan attachments you receive and send.**
- **There's no clear-cut rule on whether you should reply to every E-mail. Some say you should so the sender knows you got it; others say you aren't obligated to answer.**
- **Don't reproduce an E-mail message in full when responding to it.**
- **Be aware of the size of the attachments you send, especially if you're sending it to someone who's logging in from a hotel.**

TIM LEWIS

Internet service acquisitions may raise prices and quality

▸ *Merger madness will improve service to users*

By Matt Hamblen and Bob Wallace

NETWORK MANAGERS and analysts believe the recent flurry of mergers among Internet service providers will lead to metered rates and higher prices for the all-you-can-eat plans used by consumers and many telecommuters.

An early sign of this trend is the recent decision by America Online, Inc. in Dulles, Va., to raise its monthly flat rate by 10%, from $19.95 to $21.95.

A day after America Online's announcement, Sprint Corp. in Kansas City, Mo., said it would merge its 130,000 consumer Internet service provider accounts with EarthLink Network, Inc. in Pasadena, Calif.

Mergers involving midsize or large companies seem to happen weekly, but small companies are being bought at an even faster pace. Merger brokerage company New Commerce Communications in Zwingle, Iowa, lists more than 100 Internet service provider acquisitions since Nov. 1.

Despite the higher costs that come with ongoing consolidation, companies that depend on 'net service providers for high-bandwidth connections see advantages such as higher-quality connections and better service.

"Overall, I think [Internet provider] consolidation will provide more large users a single place to call for support," said Sheryl Olguin, network manager at Harris Corp., a defense contractor in Melbourne, Fla. "Today, you sometimes have to go through two or three [companies] to get to the source of a problem because your [provider] has circuits on a second one, which has them on a third one, and so on."

For example, Lori Hammock, an administrator at Little Caesars Enterprises in Detroit, said it has helped to have Internet MCI service because it is available to remote users nearly everywhere, and it is easier to get service from one provider.

Recent Internet provider acquisitions and mergers:

- **Concentric Network Corp. in Cupertino, Calif., signed an agreement Feb. 2 to buy InterNex Information Services, Inc. in Santa Clara, Calif., for $15.5 million.**
- **RCN Corp. in Princeton, N.J., announced plans Jan. 21 to spend $110 million in cash and stock to buy UltraNet Communications, Inc. in Boston and Erol's Internet, Inc. in Springfield, Va.**
- **PSINet, Inc. in Herndon, Va., announced plans Dec. 24 to purchase 69% of Toronto-based Istar Internet, Inc.'s shares for $22 million.**

"The only place I've heard of anybody not getting into Internet MCI was Turkey," Hammock said.

Billy Templeton, a network manager at Cooper Tire and Rubber Co. in Texarkana, Ark., said consolidation would simplify matters. "If you had a national [Internet service provider], a company could be on the same [service] for everybody, instead of different [providers] for different offices. It might even improve reliability. And a national [service provider] would mean one bill."

Analysts since 1996 have predicted that this consolidation of players would occur. They say it will last several more years.

MONEY EQUALS SERVICE

The biggest phenomenon driving the consolidation is the need to spend money to improve quality of service and offer guarantees against network latency, service outages and more.

"Those things cost a lot of money and, frankly, the little [providers] don't have it," said Erik Paulak, an analyst at Gartner Group, Inc. in Stamford, Conn.

Gartner last summer predicted that 4,500 Internet service providers would sink down to 500 by 2002 — a 90% reduction in the number of players. "Even if it's higher, you'll still have hundreds of [providers] to choose from," Paulak said.

Of the 500 survivors, he predicted there will be 15 to 20 huge service providers nationwide and nearly all will be large telecommunications firms.

James Livesay, director of network management at Advanstar Communications, Inc. in Duluth, Minn., signed up for Internet service in 1996 with a small regional 'net provider in his town. It would be convenient to have a larger company that also could directly serve Advanstar's corporate headquarters in Cleveland. "But the local [provider] doesn't have the financial backing to expand," he said.

Paulak said a wise network manager might be able to build a network with one large carrier that brings total costs down. "If you build a hybrid network with frame relay at one location and IP elsewhere and link them, you could save," he said. □

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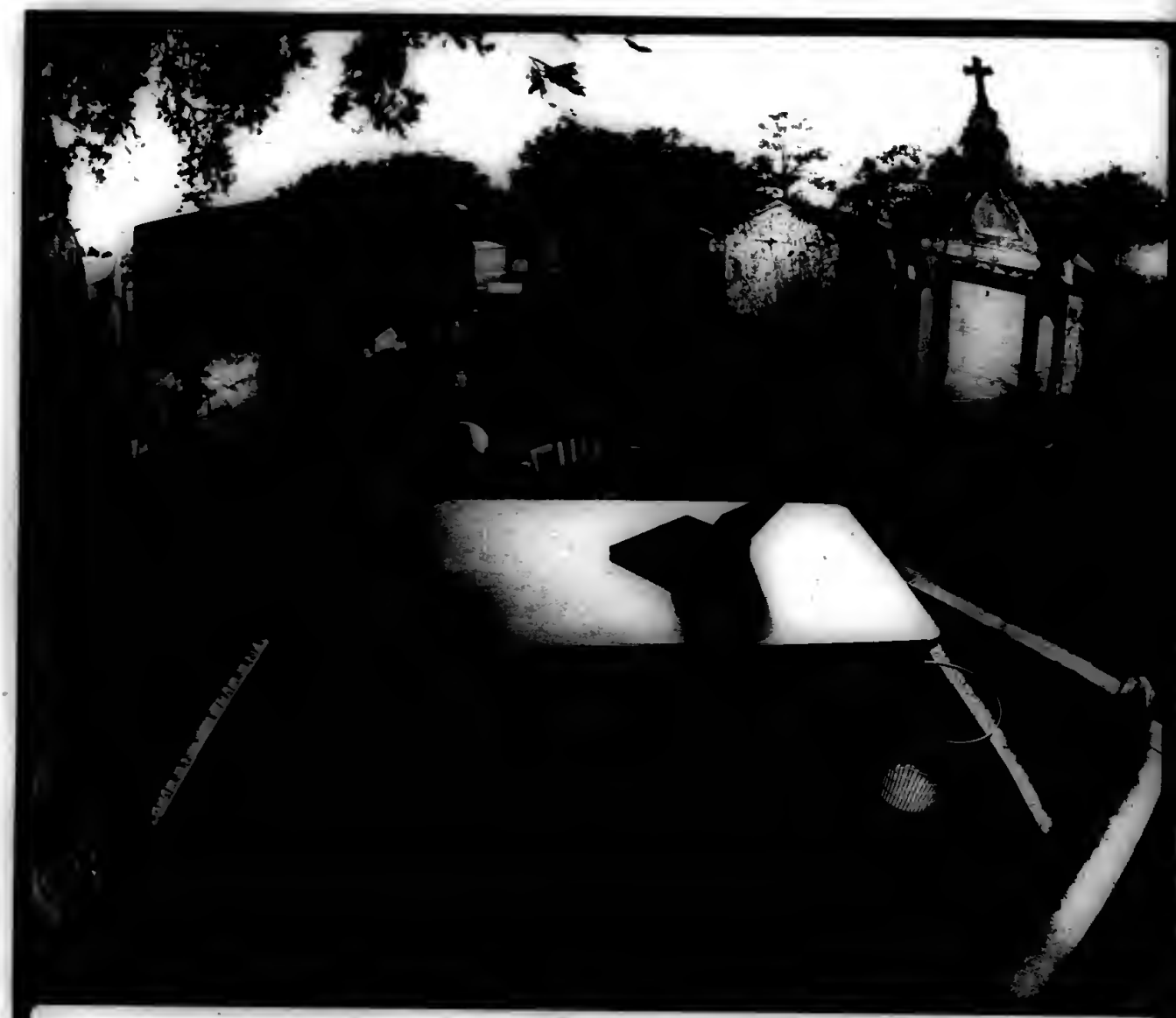

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QUICK STUDY

Hot trends & technologies in brief

Rmon analysis

DEFINITION: Remote Monitoring 2 (Rmon2) is a standard that defines performance statistics, connections and application activity along networks. It requires powerful probes to gather statistics and analysis software to yield meaningful information. Rmon2 shows traffic flow across a network. Then troubleshooters can find out which clients talk to each server, how often, what applications they run and how much bandwidth those applications consume. This high-level view differs from the original Rmon standard. Rmon probes and agents embedded in internetworking gear focus on low-level activity within individual LAN segments.

New monitor broadens view of network service

By Patrick Dryden

IS MANAGERS under pressure to set and maintain service levels for their users can get a high-level view of network performance with Rmon2.

Rmon2 tools reveal how the network is being used end to end, instead of just analyzing the plumbing in a single LAN or switched segment, as with the original Rmon tools.

Studies of Rmon use prove that the bigger the network, the greater the savings in staff resources and budget. That's because central operators can analyze errors and packet traffic in far-flung LANs. They can turn on the Rmon agent embedded in a hub or switch, or ship a stand-alone probe to the site. That saves companies the need for remote staff or travel.

"Rmon2 promises even stronger return on investment because it addresses problems between parts of large networks," says John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

The Rmon2 market could grow 15% this year if buyers catch on to benefits such as the ability to profile traffic over costly wide-area network links, said analysts at International Data Corp. in Framingham, Mass.

Rmon2 analysis gives a snapshot of user and application activity across the network. Instead of guessing at the causes of heavy traffic, information systems managers can map the actual flow between clients and servers.

"Tactically, this view can validate or disprove assumptions about what's going on. Strategically, it can characterize traffic to help define service levels," says Kathrin Winkler, a senior consultant at Renaissance Worldwide, Inc. in Newton, Mass.

AT ISSUE

End-to-end analysis tools

Although the benefits make the standard seem like a no-brainer, Rmon has caught on slowly as a troubleshooting tool, and Rmon2 confuses potential users with its promises and pitfalls.

So far, IS managers haven't been able to figure out how to incorporate such Rmon2 knowledge in their daily operations, Winkler said. They are struggling to shift from reactive to proactive network management and to determine how to set and maintain service levels, she says.

Rmon and Rmon2 tools can help meet those goals, but they are just part of a larger tool kit, McConnell says.

Another class of products — service-level monitors — must provide the user's-eye view of performance. With this type of analysis, central IS operators can measure response time, not just watch what data gets delivered throughout client/server networks.

Those tools warn of problems with service quality. Then central operators can focus Rmon and Rmon2 tools on traffic in a segment and across the network to troubleshoot or optimize performance.

Work is under way to add service-level reporting capability within the Rmon2 specification itself.

Vendors have proposed a way to expand the defined Rmon2 data groups so those tables can measure the flow of applications between checkpoints. Then central monitoring software will be able to report the network portion of response time and set off alarms — hopefully before users call to complain about slow performance.

"The more information I can extract, the better, because I need to analyze usage trends and forecast bandwidth needs," says Patrick Meyers, a network technical consultant at Ceridian Employer Services, Inc. in Bloomington, Minn.

He recently added Rmon2 capability to track the effect of application traffic on the WAN linking offices of the payroll processor. □

QUICK STUDY ONLINE

Users can visit *www.computerworld.com*, click on Resource Center. Under In Focus, click on QuickStudy.

CAUTION AHEAD

Rmon2 users beware . . .

Device overload
Most internetworking devices come with embedded Rmon capability, but tracking usage and application traffic demands a lot more processing power and memory. Adding Rmon2 functions to an internetworking device can interfere with its normal work.

Network overload
Watch out for the desire to gather too much information too often. Voluminous data can swell bandwidth demand. And condense data or filter out the most significant changes before sending it across expensive WAN connections.

Probe placement
Rmon monitoring requires a probe or embedded agent for every segment, while Rmon2 monitoring requires only a few probes to examine traffic across the network. That's good because probes are pricey. Place one between the server and users or at key gateway points.

Proprietary extensions
Interoperability is slow in coming from Rmon2 vendors. They view the standard as a lowest common denominator. Decide what's more important — using one vendor or ensuring an open future of interchangeable hardware/software.

Future directions
Given the high-level view of network activity through Rmon2, users are looking for more features from the standard. Work is now under way to improve scalability, examine WAN traffic and measure response time across the network.

RELATED NETWORK MANAGEMENT LINGO

Management Information Base (MIB) A database of statistics inside a device that describes its status and performance

Simple Network Management Protocol (SNMP) Polls devices and checks alarms from a central point for status and performance

Packet Internet Groper (Ping) Internet Protocol utility that tries to reach a remote device by echo messages

Users could reap the following cost savings when implementing Rmon; Rmon2 promises even greater savings

Base: 176 companies that implemented Rmon

Source: McConnell Consulting, Inc., Boulder, Colo.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at* **stefanie_mccann@cw.com**

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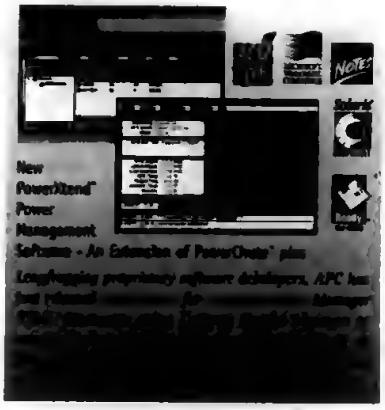

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OPINION

OPINION

Chicken Little syndrome As the drumbeat of dire warnings about year 2000 readiness grows louder, there are days when I think the sky might be falling after all.

Last week, for example, we reported on our front page that the Federal Deposit Insurance Corp. (FDIC) is threatening some private banks with closure if they can't prove to federal auditors that their year 2000 fixes will be done in time. Never mind that the FDIC is months behind its own millennium conversion schedule. Just a few pages later, another year 2000 cloud appeared as a warning from the venerable Gartner Group, which says 90% of older electronic-mail systems might screw up message handling when the date hits 1/1/00. Another crack of lightning in that darkening sky.

Topping that off, two of our columnists cautioned technology managers not to rely on lawmakers for any year 2000 legal protection — and especially to avoid feeling optimistic if their projects seem to be going well.

This unrelenting focus on the consequences of year 2000 failure — echoed not only in our pages but also in every other technology and business publication — makes Chicken Little look like an optimist. Yet while federal bureaucrats fret and industry pundits jump at each roll of thunder, let's keep in mind that tens of thousands of talented computer professionals are handling the whole mess with a great deal of grace under fire.

Just last week, I visited a New Jersey manufacturer where the corporate IT director is working 16-hour days to keep his $11 million conversion project on track. He's watching his front-line managers grow new business skills. He's seeing better relationships develop with electronic data interchange partners, as his company helps them identify some of their own millennium conversion issues.

Sure, some days he worries that the sky really is falling. But he's not losing faith that his profession can handle this.

Chicken Little be damned.

Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*

LETTERS

L.A. salaries not confidential

I was amazed to see that Los Angeles didn't make *Computerworld*'s list of "The Top 25 IS Job Markets" [CW, Jan. 12] when the greater Los Angeles job market has the largest number of IT professionals and positions in North America.

Contrary to the salary information in your Regional Scope feature, it also pays much better. Los Angeles-area CIOs enjoy starting salaries that are commonly more than $240,000 — more than anywhere else that was quoted.

I was also astounded to see how reasonably low the salaries in Southern California were, according to Jeffrey D. Zbar's statistics. Among my large, multitier IT clients' Southern California salaries, for example, I regularly make the following offers: $96,000 to $130,000 for a director of systems development and $80,000 to $95,000 for a database administrator.

Other than those discrepancies, I thoroughly enjoyed the issue.

John C. Wallin
Consultant,
IT executive search & recruiting
Irvine, Calif.
wallinjc@sce.com

Let the games begin

In response to *Computerworld*'s "Not playing around" article in the Dec. 1 issue, I don't see any problem in letting workers play games during the lunch break as long as they don't disturb others' productivity. I would rather let a productive employee blow off steam playing a game than leaving work stressed and taking the anger out on the highway. If a manager cannot distinguish productive work vs. unproductive work, the manager is the problem, not the employee.

Oh, and I'm so pleased the government is stepping in to take games off federal PCs. Now they can play games with our tax dollars instead.

Larry Carnes
Blythewood, S.C.
larry_carnes@bose.com

Load balancing a boon

Congratulations on a keen and timely story in your Dec. 1 edition ["Load balancers aid Web site access"], where writers Bob Wallace and Matt Hamblen call out the merits of load balancers on the front page. The techniques the balancers use for Internet servers can be applied to any application. Those technologies are in hand and will make computing even more transparent to the users and software designers than it is today.

This is only the beginning of a new wave of distributed computing technology.

It's only the beginning of distributed computing.

Larry Bernstein
and C. M. Yuhas
Have Laptop, Will Travel
Short Hills, N.J.

Poor decision-making skills

My thanks to *Computerworld* columnist David Moschella for pointing out many of the events that have led to both the arrogance and the superiority of Microsoft in the marketplace ["With enemies like these . . .," CW, Jan. 26]. There is little reason to hope that many of the companies in Microsoft's wake will improve their competitive skills. Rather, they seem to hope the courts or the Justice Department will bail them out after their poor decision-making.

John Hooper
Nashville

QuickStudy helps start reader's day on right side

I like *Computerworld*'s QuickStudy! I also like *Computerworld* for having just the right mix of techno-, socio-, politico-, and Oh No! stuff to make it informative and entertaining and fun to read with my morning coffee before I launch Visual Basic and start my workday.

Larry Street
Birmingham, Ala.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Year 2000: What? Me worry?

Michael Cohn

You may be one of a few hundred thousand people who read this through bloodshot eyes. Your hands shake. Your scalp is bare. You're tense. Depressed. You forget where you live. You are a year 2000 programmer, and your life is hell.

Days turn into nights. Bosses hang over you with 40-page Gantt charts. You're a captive of Cobol. A slave to C. And yet there's news, and the news is good: From now on, you don't have to give a damn.

You don't have to make your deadlines. You don't have to convert your applications. Your work doesn't have to get finished. Heck, it doesn't even have to be right!

Got a resume? A reference? A pulse? You may be qualified to lead a date-change project.

Why? You can quit any time. You can hit the door and wave goodbye, with one hand or one finger. Because there are just too many openings. Too many millennium projects desperate, desperate, desperate for people. Leave one job on Tuesday, be coding away Wednesday afternoon. If you can move a mouse, the world is your oyster.

Are you a contractor? Consultant? Full-timer? Who cares? There's another job waiting for you.

Got a pension? Golden handcuffs? Twenty years with the company? Toss 'em, because you can make them all up on the next signing bonus.

Salespeople are signing year 2000 deals hand over fist. They're selling deals they can't staff. They're inking deals they can't start. They want you to be on the next one.

So you don't have to be loyal. You don't have to be good. All you have to be is breathing, and that may be negotiable, too.

Got a resume? A reference? A pulse? You may be qualified to lead the next project.

TWO-WAY STREET

Look at it this way: We're never going to get this whole year 2000 thing right anyway. If you fix yours, odds are somebody won't fix theirs. You'll get screwed by some supplier. Some bureaucrat will misplace a million or so lines of Assembler. Some embedded chip will think that every other Thursday is Leap Day.

So why not jump ship? Change jobs as often as you change print cartridges. Wouldn't a new project be more fun? By 2000, you can have dropped in on nine or 10. Meet people. See the world — or at least every insurance company in Connecticut. They'll take you, no questions asked, as long as you use the word "remediate" in your rigorous, 90-second interview.

Year 2000 is hard. No-one thought YYs would be so tough to find. Or test. Or not test, as is most likely the case if you've got about 3n million of them and you haven't even found half the source code.

So to you out there who struggle: Struggle no more. Change jobs. Start again. Screw up a bunch of times. Be blamed no more! No one will complain. No one will care.

Because if you think you're in demand now: just wait till Dec. 31, 1999 . . . when most companies will really start their year 2000 projects. □

Cohn is a year 2000 programmer in Atlanta. Or at least he has it on his resume.

Sticky times for customer service

Michael Schrage

Am I the only infonaut totally creeped out by that "charming" television ad starring Saturn's customer service database? You know the one: geeky car owner shows up at Saturn service departments across the country moaning about imaginary auto ailments.

However, he doesn't need repairs; he's really a jelly-donut junkie. A shop guy scans this guy's record on the Saturn customer database and sees that all these complaints are utter nonsense. At the bottom of the screen is the asterisked notation: "Likes jelly donuts." Ha! Ha! Cute, no?

The last shot is of Jelly Boy driving off in his Saturn with his smug, ugly, larcenous face flecked with stolen sugar.

I know TV advertisements have nothing to do with real life, but part of me wants to know why Jelly Boy isn't being charged $5n a shot for wasting everybody's time.

If General Motors wants to bundle jelly donuts with its Saturns, fine. But the idea that GM uses its network to track jelly-donut scammers nationwide makes me nervous about the future of "customer service" databases.

I don't like dishonest customers any more than I like dishonest companies. But the future is clear: IS will find itself in a maelstrom of business dilemmas as organizations increasingly use so-called customer service databases to manage costs as rigorously as they are used to service customers.

AT&T, for one, already uses databases to rout its least-profitable customers' inquiries to automated systems. The truly profitable customers (like me!) get routed straight to helpful humans. AT&T Chairman and CEO C. Michael Armstrong celebrates the cost-effectiveness of this discriminating approach to customer service.

The airlines, too, are famous for favoring their frequent flyers: Platinums get treated better than Golds.

But what happens when customer service representatives annotate your record with notations like "Obnoxious Boor" or "Frequent Complainer" or "Charming Manipulator"? That jelly donut doesn't taste so good all of a sudden, does it?

QUERYING STANDARDS

In an era when management gurus preach empowerment, do we give the people on the line the right — the obligation — to build these kinds of customer profiles into the database? Or does it make more sense to create standardized rules to prevent individual abuses? After all, we already know some companies have built up racial profiles to discriminate against potential customers in violation of the law.

But should it really be against the law to encourage customer service to describe an obnoxious boor as an obnoxious boor, or a charming liar as a charming liar? Or should companies make special database-driven efforts to keep track of which customers are abusing their service guarantees? After all, why should the honest and polite customers be penalized for costs incurred by dishonest and abusive customers?

Why isn't the Jelly Boy in the Saturn ads charged $50 a shot for wasting everybody's time?

Three years ago, these were hypotheticals; today, they inspire national ad campaigns. Go figure.

My unhappy conclusion is that the rise of 1:1 database marketing will lead to new forms of customer discrimination as much as new value for customer service.

IS will be called on to design and deliver tools that allow the organization to define and delete undesirable customers. Interesting abuses will emerge. Embarrassing stories and expensive lawsuits will blot the digital landscape.

Come the new millennium, no one will think that Saturn ad was so funny.

Bon appetit! □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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Briefs

Vacancies? Oh Canada!

Immigration experts predict that this year's cap of 65,000 H-1B visas for foreign IT and other professionals could be reached by May. But U.S. companies still will be able to hire Canadian professionals under the terms of the North American Free Trade Agreement (NAFTA). NAFTA lists more than 60 types of professionals who can enter the U.S. without an H-1B visa, said Carl Shusterman, a Los Angeles immigration attorney. "Canada is the silver lining for U.S. high-tech firms that have been stymied by the visa cap," he said. "Canada is close, there is rarely a language barrier and the immigration obstacles facing U.S. employers of Canadians are minimal."

SAIC spin-off

Science Applications International Corp. (SAIC) in McLean, Va., has launched a cybercrime prevention and information protection company called Integrity Solutions International Corp. It was formed by consolidating personnel and offerings from several SAIC organizations. The new firm will offer software and services for securing online financial transfers, protecting intellectual property and implementing secure electronic-commerce systems.

Manugistics adds link

Manugistics, Inc. in Rockville, Md., said it will buy Ottawa-based Prolite Software, Inc. for $68 million. Manugistics will acquire Prolite's planning software for complex products in the high-tech, electronics and automobile industries.

SUPPLY DEMAND

By 2002, the average company will spend 45% of its IT budget on applications that cross departmental boundaries. These systems will link partners, customers and markets into virtual supply chains.

Source: Forrester Research, Inc., Cambridge, Mass.

Business, IT wires crossed

MARC BERLOW

▸ *Users say units still chasing common goals*

By Craig Stedman
ORLANDO, FLA.

FOR YEARS, pundits have admonished IT workers to get more in tune with the business needs of their companies. But that's still easier said than done.

Despite all the encouragement, mixing the business and information technology worlds often is like trying to mix oil and water, said a half-dozen attendees at a conference held here this month by Meta Group, Inc. in Stamford, Conn.

Just ask Mercedes Johnson, a principal business analyst in the fuel procurement department at The Detroit Edison Co. Johnson wants to work with her information systems counterparts to develop new applications that the utility needs to compete under upcoming deregulation measures.

"As a business unit, we have our own ideas of what we want to do, and IS often has its own way of doing things. It's something that we've been struggling with for a while," Johnson said.

She said she had traveled to the technology conference to help in this effort, "so I can talk to the IS people in more depth."

Several technology managers said their IS staffs also are struggling to adopt a more-business-driven mentality.

"Getting technology people to be customer-oriented is not easy," said Rod Calacci, central computing manager at Sundstrand Corp.'s aerospace unit in Rockford, Ill. "I work on them every day. Some will change, some won't."

To help prod IS employees to put the needs of users ahead of technology for its own sake, Sundstrand is looking at melding its "siloed" technical functions such as application development and

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Brokers face Web trading dilemma

▸ *Standards for online, off-line service don't mesh*

By Thomas Hoffman
NEW YORK

CONFLICTS BETWEEN providing Internet-based trading and keeping commission-dependent brokers happy isn't the only roadblock preventing the Merrill Lynches of the world from entering the online fray.

The lack of unified regulatory standards to supervise how brokerages can conduct electronic communications with customers "has caused a great deal of consternation" among member firms, said Kenneth S. Spirer, first vice president and assistant general counsel at Merrill Lynch & Co. in New York.

Spirer was one of several speakers at a recent Securities Industry Association (SIA) Internet conference who addressed the troublesome governance issues that full-service brokerages face. Discount brokerages and companies that conduct all their stock trades online aren't as heavily regulated.

The lack of cohesion among governing bodies such as the Securities and Exchange Commission (SEC) and the New York Stock Exchange "is the No. 1 reason why my [full-service brokerage] customers haven't launched" Internet-based trading services, said Mark J. Smith. Smith is an information systems manager at Southwest Securities, a Dallas-based broker/dealer that also develops World Wide Web sites for brokerages.

NYSE's Edward Kwalwasser: Regulation of Web data is up to member firms

For example, the SEC in 1996 issued a set of guidelines that cover how brokerages can send information electronically to their customers. But one of the SEC's conditions is that brokerages must store every piece of electronic-mail correspondence they conduct with their clients.

The high cost of storing and retrieving massive volumes of E-mail has created quite a stir in the industry, Spirer said.

Smaller full-service brokerages don't have the manpower to review and monitor compliance requirements from a

Brokers, page 40

Georgia cracks Web nut

▸ *State looks to mainframes to post job data to Web*

By Jaikumar Vijayan

GEORGIA'S DEPARTMENT of Administrative Services is trying to give its member agencies direct access to job listings on the World Wide Web as part of a statewide effort to put more welfare recipients into the workforce.

The goal is to give state workers who place people in new jobs access to more employment information than they have now.

But instead of investing in new PCs and office networks, the state plans to provide Web access through its existing mainframe terminals using software from GT Software, Inc. in Roswell, Ga. (see chart).

GT's Novation:

- Allows access to mainframe data through the Web
- Provides CICS access to intranet information
- Provides a graphical interface to character-based applications

WEB LINK

Georgia's efforts reflect a growing trend by many mainframe shops: Using new tools and software to link their mainframes to the Web. The technologies expand the functionality of standard text-based 3270 terminals and make mainframe data more accessible to users via the Web [CW, Jan 19].

Such technologies also let users leverage their mainframe investments, said John F. Jolin, information technology director at Georgia's Department of Labor. Georgia agencies that are slated to use the new application include the labor, human

Agencies, page 40

EU countries behind with euro upgrades

By Kristi Essick

MORE THAN A THIRD of European businesses haven't taken the first steps to upgrade their computer systems to comply with the upcoming European Monetary Union currency, a new study has found.

The new currency, the euro, is slated to be introduced in some of the European Union's 15 countries next year.

But 37% of European businesses haven't considered fixing their information systems to accept the euro, according to a study from the London branch of Grant Thornton International accounting firm.

OLDER SYSTEMS

The euro problem stems from the fact that many computer systems aren't equipped to recognize the new currency or to convert it to other currencies. For some companies, the problem coincides with fixing year 2000-related bugs in their systems.

And while half of the companies surveyed said they were aware of the euro problem, only 11% of businesses in Europe have taken any IS-related action to solve it.

The Grant Thornton study was based on responses from 6,000 companies located throughout the EU, surveyed in October and November in all of the 15 EU member countries as well as Malta, Switzerland, Turkey, Norway and Poland.

The euro will have a greater effect on computer systems than decimalization (some currencies previously didn't use decimal points), value-added tax and the year 2000 problem combined, according to the report.

Companies that fail to take steps to update their systems to handle the new currency will struggle to remain competitive, the study warned.

Germany and Spain have the lowest proportion of companies that have yet to even consider the IT implications of the euro. According to the study, just 41% of respondents in both countries have considered the problem. □

Essick writes for the IDG News Service in London.

Business and IT wires crossed

CONTINUED FROM PAGE 39

technical support into a more unified and service-based organization, Calacci said.

The $1 billion aerospace operation, which makes products such as fuel pumps and power generators, also plans to create five new internal marketing and user liaison jobs within IS. Their main duties will be to keep close tabs on business units and "help with the translation between technical and nontechnical people," Calacci said.

Michael Merritt, chief information officer at Primestar Partners LP, established the same sort of liaisons after joining the Philadelphia-based satellite TV company last year.

"They're our eyes and ears in the business, and they try to be the same for the business into us," he said.

MIXED GROUP

Four of the five jobs were filled with people from the business side, added Merritt, who also set up a technology strategy group that meets monthly and has a mixed membership of business and IS managers.

Technology investments "should be looked at the same way as building a new distribution or manufacturing plant would be," said Donald Faistl, director of technology infrastructure and communications at International Flavors & Fragrances, Inc. in Union Beach, N.J.

But too often, he added, IS workers zero in on a technology with no particular business goal in mind.

International Flavors & Fragrances, a $1.5 billion manufacturer, is trying to change that mind-set through coaching, increased interaction with business units and outside courses and conferences in verbal and written communications. "I wouldn't say we're fully there, but we've started the process," Faistl said.

The same is true at Detroit Edison, Johnson said. The utility formed a business/IT strategy team that put together a plan for the new procurement applications.

"I think we're making inroads now," she said. "We've opened the lines of communication." □

Year 2000 legal shields not in view

By Patrick Thibodeau
HARTFORD, CONN.

BLANKET LEGAL protections against year 2000-related litigation aren't on the horizon for companies battling the date-change bug, a U.S. senator told business representatives at a hearing last week.

A U.S. Senate subcommittee studying how banks will be affected by the year 2000 computer glitch went on the road last week to take a broader look at the problem.

The committee representative also issued a word of caution. Senator Christopher Dodd (D-Conn.), who convened the U.S. Senate Banking Committee's hearing here, warned businesses that blanket legal protections against year 2000 litigation won't arrive soon.

He said it is difficult to craft so-called safe harbor protections because of the problem of deciding who and what should be protected.

And, Dodd said, businesses that receive such liability shields will have fewer incentives to repair their computer glitches. "Litigation is one of the means we have of getting people to move on these issues," he said.

The Banking Committee has focused on financial institutions, but the hearing explored the year 2000's impact on medical devices and air transportation. It had two goals: collect testimony and raise awareness.

ONE PICTURE

It was with the latter objective in mind that the hearing opened with a simple demonstration — a PC malfunctioning at the crack of midnight, Dec. 31, 1999. Vincent Mullineaux, president and CEO of Millennia III, Inc., a year 2000 vendor in Westport, Conn., showed the PC returning to its default date of Jan. 4, 1980 after it rebooted.

Corporations represented at the hearing, such as insurance giant Aetna, Inc., were concerned about broader repercussions. Even if companies are vigilant in preparing their own computer systems for the turn of the century, they pointed to woes they may suffer if businesses they deal with don't complete their repairs in time.

"We can't be successful operating alone," said Louise L. McCormick, an Aetna vice president who is heading that company's year 2000 effort. □

Agencies to access Web via mainframes

CONTINUED FROM PAGE 39

resources and adult and technical education departments.

"If GT's software allows us to do what we want to, it will give us a chance to grow [mainframe functionality] without spending [a lot of] dollars to replace terminals with PCs," John said.

GT's software has been installed as a native CICS transaction on a mainframe in the Administrative Services Department.

When the GT software is fully implemented, nearly 4,000 state employees in the three agencies will be able to access Web resources such as America's Job Bank (*www.ajb.dni.us*) from their 3270 terminals over their existing SNA networks, John explained.

That could make it easier for employees in the state's Labor Department to find jobs for the estimated 400,000 job seekers who seek help from it annually, he said.

GT's software also will allow the agencies to communicate with one another via electronic mail, a capability that doesn't exist today.

And that kind of communication will help the state streamline the way it handles job seekers and "reduce duplication of efforts between the agencies in getting an individual ready for work," John said.

But Web access on a mainframe doesn't come without its risks, users said.

Putting a Web server close to vital data on a mainframe could compromise its security, said John Clayton, a technical analyst at the Connecticut Department of Administrative Information Technology in Hartford.

The state recently tested GT's Novation software on its mainframes as part of an effort to provide users with CICS transaction access to intranet information.

But Connecticut decided to abandon the effort, Clayton said, because of security concerns. □

Brokers

CONTINUED FROM PAGE 39

horde of regulators, Smith added.

Compliance issues are further complicated by the global nature of financial trading. Activities viewed as compliant in the U.S. might not make the grade in European or Asian countries, thus inviting the wrath of foreign regulators.

"The U.K. view is that when [financial] information is delivered to someone in their country, then it's under [British] jurisdiction," said Michael D. Mann, a partner at Richards Spears Kibbe & Orbe, a Washington law firm.

"What we're basically telling member firms is that supervision is up to them," said Edward Kwalwasser, group executive vice president at the New York Stock Exchange.

The good news is that some inroads are finally being made to pave the regulatory cow path.

NASD Regulation, Inc., the Washington-based governing body for Nasdaq Stock Market, Inc., is developing an Internet surveillance system called NetWatch. The system is slated to be rolled out by the middle of this year. It was designed to track trading and stock price movements among member firms, said Elisse B. Walter, chief operating officer at NASD.

There is a bill before Congress called the Electronic Financial Services Efficiency Act (HR 2937), which, if passed, should provide a standard for U.S. regulators to evaluate digital signatures, said Kristin H. Roesser, vice president of legislative affairs at the SIA. "They say if you like sausage and you like legislation, you should never watch how they're being made," she said. □

FROM THE EDITORS OF

COMPUTERWORLD

VOLUME 4, NUMBER 2

FEBRUARY 23, 1998

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

BUILDING BUSINESS APPLICATIONS

Giant Steps

Intranets have leapt to embrace essential functions. Next stop: running the company, once the tools catch up. / *By Tony Baer*

Thomson Consumer Electronics, maker of RCA televisions, was saddled with a cumbersome VAX-based product management system.

An early attempt to rewrite it as a C-based client/server application failed because of the all-too-familiar scalability problems of two-tier client deployment. So last year, as Web application servers gained stronger database access capabilities, Indianapolis-based Thomson took the intranet leap.

The company developed an intranet-based repository of product specifications that drive everything from design and assembly to parts replacement strategies. The application, which calls static Hypertext Markup Language (HTML) pages stored in an Oracle7 database,

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Continued from page 1

uses Bluestone's Sapphire/Web application server. It serves 40 product management and engineering users at several sites, and there are plans to expand access and content to other departments.

Thanks to more mature Version 3.0-level Web application server products and the emergence of middleware plumbing and packaged Java applications, 1997 was the year organizations started to bring their business apps to the Web. Even as the Java wars heated up, more and more organizations discovered that Web development isn't all that much more than an extension of the distributed systems they began building with client/server technologies.

And in 1998, businesses will be able to take even greater steps in embracing the intranet, even if they will still stop short of using it for mission-critical applications. But business programs will blossom as companies build on their own experience and that of the technology vendors. Consider these anticipated technical developments:

- Web development tools are adding scalability features.
- Java Database Connectivity is gradually achieving parity with the more established Open Database Connectivity.
- Upcoming versions of the Java Development Kit (JDK) are supporting more of the graphical user interface (GUI) visual controls taken for granted in Windows.
- Dynamic HTML is adding some of the visual flexibility but not the controversy of Java.
- The first versions of client- and server-side Java Beans are emerging. Java Beans is a specification for Java components that Sun Microsystems, Inc. developed in order to provide a means for developing vendor-neutral Java components.

OUT IN FRONT

Some early implementers are already ahead of the curve.

Chip maker Advanced Micro Devices, Inc. is already using one of the first "100% pure Java" packaged applications to save money as well as gain a strategic foothold in Web commerce.

AMD's system, Ariba's Operating Resource Management System (ORMS), combines a workflow-based process with automated ordering from Web-based supplier catalogs and promises to save tens of millions of dollars in supplies, says Pat Guerra, vice president of corporate supply. However, like Thomson's system, ORMS is important to AMD but not essential to operations. "We'd still have

Tools Scale New Heights

Web development tools will see a spate of new functions in the coming year. Dynamic scalability, multithreaded processing, load balancing, failover and component-based development are all scheduled to enter the lexicon.

A sampling of the planned enhancements follows:

- **Bluestone and NetDynamics will add support for server clustering, multithreaded processing and automatic failover.**
- **NetDynamics will phase out its proprietary object request broker (ORB) in favor of Visigenic Software, Inc.'s CORBA ORB.**
- **Bluestone will add interfaces with enterprise resource planning systems, messaging middleware and transaction monitors.**
- **Novera will introduce enterprise-scale Java CORBA components and services that perform configuration management, access control, relational and legacy database access, event management and help desk integration. Similarly, Sapphire/Web is adding application performance logging capabilities that can also integrate with enterprise frameworks such as Tivoli Systems, Inc.'s Tivoli, Computer Associates International, Inc.'s Unicenter or BMC Software, Inc.'s Patrol.**
- **Haht will add support of server-based Java, in addition to its Visual Basic-like development environment.**
- **SilverStream will exploit enhancements of JDK 1.1 to add Windows-like visual controls.**
- **Visioo Software will introduce business rules-based development to Java.**

- **Microsoft will add an integrated debugger to Visual Studio, encompassing the Visual InterDev Web application server and its various languages (e.g., Visual Basic, Visual C++, Visual J++ and Visual FoxPro).**
- **Java will be introduced in packaged applications, with Oracle Manufacturing adding Java thin clients while Ariba introduces a new manufacturing management package built from the ground up in 100% pure Java.**

— TONY BAER

hard copy to fall back on," Guerra says.

Other companies have gone straight for the jugular — that is, core systems. At Pacific Bell Video Services, a wireless cable TV provider, telemarketing representatives use a Java-based real-time application to log customer orders. Built using Vision Software's Vision JADE, the application is the business — and part of a competitive strategy to deliver state-of-the-art customer service in a market where customers already have more conventional options, such as regular cable.

Yet for organizations experienced with client/server technology, the transition to Web-based applications is more evolution than revolution. Forget the folklore about the grunged-out Gen X Webmaster hijacking the corporate agenda. When you're developing intranet or extranet business applications, the accent is on application logic. The content comes primarily from relational databases, not Webmasters.

"Intranet business applications are basically n-tier applications which happen to use the Web and Java as the deployment environment," says Mary Panttaja, president of Panttaja Consulting Group, a San Francisco-based consultancy specializing in both Web and client/server development.

In addition, adds David Litwack, president and chief executive officer of Java start-up SilverStream and former head of Powersoft, the transition from client/server to intranet should go a lot more smoothly than the shift from mainframe to client/server. Maybe Web developers need to learn Java or component-based development, but that's a much more modest agenda than having to learn relational databases or event-driven GUI programming from scratch.

Therefore, the application life cycle should still look pretty familiar. "From an object-oriented standpoint, it's slightly different than developing client/server, but otherwise the process is the same," says Mike Anderson, vice president of information services at The Home Depot, which is currently unfurling Java-based retail and human resources applications.

One obvious contrast is the Web's hyperlink navigation. "The Web forced our developers to think differently about the user interface," acknowledges Kent Zimmerman, manager of product management and leader of a Thomson application development team. But the team quickly caught on because the problem really wasn't new. Developers always have to figure out the most intuitive way for a user to interact with the application, no matter what environment it's in.

The biggest change is probably the pace of development, with "Internet time" or "Web weeks" now the buzzwords for the faster speed by which Web applications are generated. In fact, users, now accustomed to seeing Web sites "under construction," often expect to see beta releases. At Pacific Bell Video Services, users peeked at prototypes as programmers built the application in less than 90 days.

WHAT'S ONLINE

For all our past and present stories, be sure to visit us online at www.computerworld.com/intranets

THE JAVA CONUNDRUM

If the Web is an evolution, Java has been regarded as the next step — a way to bring static HTML pages to life and, more importantly, add application logic and database interactivity. One of its advantages is that, like HTML, it is supposed to operate on any major Web browser.

The bad news is, many organizations are still gun-shy. "Java's not the Holy Grail," says David Kelly, vice

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Market Slice

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president of research services at Hurwitz Consulting Group in Framingham, Mass. He adds, "The Java wars are definitely holding people back from investing, but it's not the only factor holding them back." The battle is over what Java should or should not include. Sun advocates a platform-neutral, "100% pure Java" variety; Microsoft promotes a Windows-optimized version.

But beyond the vendor camps remains the question of whether Java runs well on all platforms. The short answer for users of older, 16-bit PCs or Macintoshes is "no" (or at least not very well). That drove TCG, Inc., a local exchange carrier in Staten Island, N.Y., that AT&T recently acquired, to stick with HTML when it built a customer-order extranet application. The same was true at Los Alamos National Laboratory in Los Alamos, N.M., which built a Web-based financial chargeback and invoicing system in HTML because a large subgroup continues to use the Macintosh.

Organizations must also consider the gap in visual functionality between HTML/Java interfaces and Windows. Both lack cascading menus, context-sensitive pop-up lists and the ability to resize different elements. That's probably a matter of time. JDK 1.1 and dynamic HTML will add many of the missing pieces.

However, JDK 1.1 doesn't yet enjoy wide Web browser support, and dynamic HTML is not yet widely used. That factor, according to intranet project leader Michael Calhoun, was an inhibiting one at Los Alamos, where dedicated Windows users are not yet ready to migrate en masse to Web desktops.

It's a trade-off, says Don Wenninger, chief information officer at computer peripheral maker Vixel, Inc., which is adopting a Java front end for all internal applications except Microsoft Office. "There are user-customizable pieces of the GUI which are not quite there yet in Java, but on the other hand, it's much easier to customize from the server end," he says. In fact, the more rudimentary Java user interface might be a benefit in disguise. "Java allows us to simplify the user

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Java Programmers Need Not Apply (a Lot of the Time)

So who's developing all of these intranet business apps? Often the same folks who have been slaving away at client/server or mainframe applications over the years.

"We're using the same developers; the only difference is they're using Sapphire/Web and C instead of PowerBuilder," says Rich Grasso, a consultant who is helping Time, Inc. digitize its photo library for the Web.

It doesn't make sense to do otherwise, given that, according to the Information Technology Association of America, there is already a 10% shortage of qualified IT professionals. Nobody in his right mind would ditch in-house talent for a few Gen X Java programmers.

"It's crazy trying to find affordable Java programmers these days," says Mathew Merchant, director of application development at NBA Properties, which markets National Basketball Association products. It is developing HTML-based workflow applications with its PowerBuilder and Visual Basic staff.

So is Thomson Consumer Electronics, which tapped C and C++ skills, and Los Alamos National Laboratory, where PowerBuilder staffers built a Web-based financial chargeback and invoicing system using web.pb, which generates HTML pages from Powersoft's PowerBuilder. At Reliance Group Holdings, the Web development team is using staffers who leapfrogged from the mainframe world (see related story, opposite page).

And where Java skills are preferred, the emerging crop of visual Java tools from vendors such as NetDynamics, SilverStream and Vision Software makes it possible for organizations to ease into Java programming without having to either hire $100,000+ Java programmers or retrain their staff overnight.

At Charles River Laboratories, Vision Software's Vision JADE tool helped the lab deploy a customer self-service application for order entry and laboratory scheduling. The lab's approach emphasized business rule development, as opposed to raw coding. So far, Charles River is optimistic that it won't have to call in Java programmers to stamp out any brush fires, says Bill Shek, director of diagnostic services.

Pacific Bell Video Services is a wireless cable TV provider that also used Vision JADE. The staff is slowly learning Java.

"We obtained a few Java books, but we didn't spend a lot of time reading them," says Torisen Gregory, director of decision-support applications.

— TOMY BAER

Building a Loyal Clientele

Reliance Group Holdings, a $8 billion diversified property and casualty insurer in New York, largely bypassed client/server technology on its way to the Intranet. Partly because of the insurance industry's conservative stance on technology, Reliance never found client/server adequate for providing access to multiple legacy and third-party data sources.

However, the Intranet's simple application deployment and its potential as a competitive business tool drew Reliance's attention. And coming from a mainframe environment, less cause would mean the loss of client/server from code that must had never had.

The web provided Reliance with the opportunity to distinguish itself with better, more informed service in an extremely mature market. That meant a way to strengthen ties with its independent agent network. "This has always been a relationship business," says Fred Kocher, director of enterprise solutions.

Reliance's first Intranet, or Reflite, application was an comprehensive risk management application that went up last year. A decision-support system, it allows 500 customer service representatives to track account status and identify risk exposures by consulting a reference database of 40,000 policies and information from content experts on subjects such as specific types of litigation or claims records. Users make predefined queries, which offer 10 to 20 variables, against the DB2 Server database; that in turn consumes a DB2 database on the back end.

To build the application, Reliance used Sheetness's Sapphire/Web application server and Netscape Communications Corp. products for Web server and browser. "We chose Sapphire because of its excellent integration with DB2 and its ability to deploy on [illegible] Netscape browsers easily," [illegible] says.

That went so well that Reliance then developed an Intranet application for agents selling workers' compensation insurance. In insurance, where the name of the game is getting quick quotes, Reliance's Intranet guarantees response times of 10 minutes or less, compared with hours or days the old way.

It's also considering an Internet-based extranet option for workers' comp claims to streamline a [illegible] process bogged down in [illegible].

One of [illegible] issues in performance. [illegible] wants to get a better [illegible] leads on the [illegible] the more established [illegible] driving higher usage. [illegible], 20 sec it [illegible] weekly [illegible] and complex [illegible] Therefore, [illegible] tell the bill [illegible] these" [illegible] of [illegible] of [illegible] in [illegible] that's [illegible] of leads we'll [illegible]

[illegible]

[illegible]

But the company may have to partition the application to load-balance around servers in New York and Philadelphia, as well as invest in additional network equipment. It hopes to take advantage of new features in Sapphire/Web 3.0 that will provide load balancing, dynamic partitioning, event logging and support of legacy system transaction monitors.

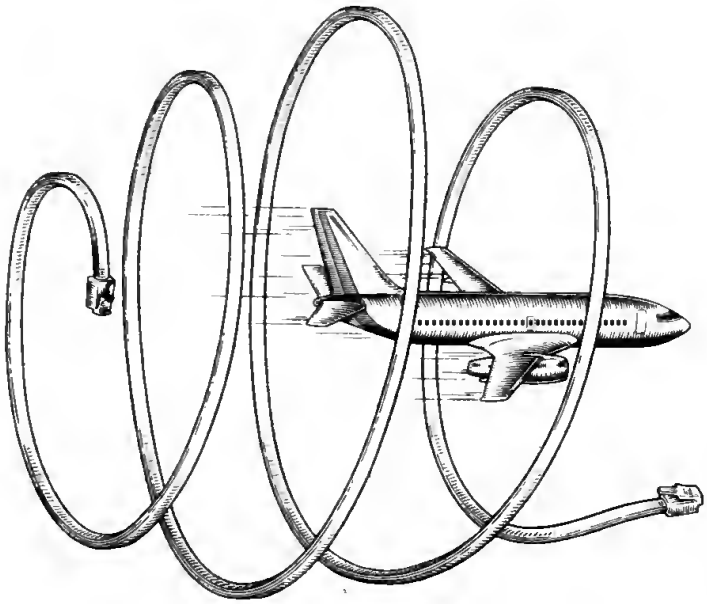
And for its top customers, Reliance is considering adding a premium service for hosting virtual private extranets to get around the uncertain performance of public networks.

"You may not get the coverage of the public network, but you still save since you're using the same application market," Kocher says.

As for the next step, Kocher is considering migrating from C and C++ to Java. He admits to some performance and standardization concerns but is optimistic. "Too many players have vested interests for making Java succeed," he says.

— TONY BAIR

PHOTOGRAPH BY RAFAEL FUCHS



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presentation," he notes.

If the thin client's "zero" deployment costs are what attracted business applications to the Web, there is still ground to cover before getting there. Processing large volumes of complex database transactions involving complex business logic remains largely untested.

"We're uncertain how well our Web-server-centric application will scale up," acknowledges The Home Depot's Anderson, echoing a common sentiment. None of The Home Depot's Web tools — including NetDynamics' tool, Novera's Java network operating environment and the various security and authentication measures — have yet seen real-life transaction loads associated with enterprise applications such as SAP AG's R/3. The company plans to benchmark its Java applications at the level of hundreds of thousands of transactions per day shortly.

SOME COMMONALITY

When it comes to load and functional testing, Web business applications share similarities but have subtle differences from their client/server counterparts. At the database server, database processing is database processing. But the connection between a database and a new application operating environment such as Java relies on first-generation middleware technology, for which testing tools have yet to be developed.

Thomson's Zimmerman says he's winging it.

"You can't really use traditional client/server testing tools, so we knew we'd have to try breaking the code manually," he explains.

On the application side, there are generic load differences between fat and thin clients that are not necessarily Web-specific. Network response is an open question. The Home Depot will focus on three areas for bottlenecks: the network, the kernel of its Novera EPIC middleware and Common Object Request Broker Architecture. And where extranet applications involve public networks, anything can happen. An inadequate phone network in Mexico has driven the Volkswagen unit there to plan virtual private network connections linking some dealerships to its extranet parts ordering application.

Testing tools for applications themselves have only recently emerged. The most basic ones test links from one Web page to another. GUI testing has proved more difficult. This process, which tests the functionality and placement of visual controls on a screen and was one of the first quality assurance areas to be automated under Windows, hit a snafu on the Web. The culprit? Unlike Windows, where the operating system defines all widgets and controls, the browser does not, according to Gareth Taube, senior vice president of marketing and corporate alliances for test tool vendor Segue, Inc. The Newton, Mass.-based company released its first Web GUI test tool only last year.

Debuggers are yet another issue. At Thomson, the team had to use C and C++ compiler debuggers because Sapphire/Web did not supply any. Fortunately, the code itself wasn't at fault. "Most of our debugging problems were related to database binds, and I don't think we had much problem with the Sapphire/Web code," Zimmerman says.

The lack of testing tools, debuggers and middleware is largely status quo for an environment still undergoing growing pains. In 1998, it's all too easy to forget there used to be questions about the scalability of Unix servers and that "the computer's down" used to be associated with mainframes.

"It all reminds me of the early days of [Visual Basic]," says Mathew Merchant, director of application development at NBA Properties, Inc., which markets National Basketball Association products and is developing HTML-based workflow applications.

"[Visual Basic 1.0] didn't have any database access, but with [Visual Basic 2.0] they added it," he says. "You'll probably see the same types of improvements happening to the next generations of Java tools."

For Smooth Sailing

- **CHOOSE WEB DEPLOYMENT** where a large number of users in diverse environments are involved.
- **ADJUST PROJECT SCHEDULES** for faster prototyping and end-user testing. Users are more than happy to test Web pages "under construction."
- **DON'T FORCE USERS** to give up fully functional Windows applications until the Web front end delivers comparable functionality. Web tools and technologies are improving fast enough that parity will be reality soon.
- **DON'T JUNK** client/server expertise. If your developers already know distributed applications and event-driven programming, they should easily adjust to the Web. And it will be cheaper than looking for new Java programmers.
- **DON'T BE AFRAID** to "Web-enable" existing applications as a bridge strategy to the Web.
- **STRESS-TEST ALL TOOLS** and components before attempting high-volume applications.

Baer is a freelance writer in Bedford, Mass.

PROJECT: CHASE MANHATTAN BANK

Extranet App Lets Clients Track Transactions

By Steve Alexander

The Chase Manhattan Bank NA recently wrote its first extranet application, a program for corporate banking called Workspace. The Java application allows corporate treasurers in small to medium-size companies to review their banking activities from the previous day. The extranet, now in testing, uses virtual private networks capable of ISDN or 56K bit/sec. speeds. Some internal bank users also access the application via an intranet. It will be rolled out as a service later this year.

Chase declined to provide cost figures but says it considers the extranet expenditure to be the cost of staying in business. The bank has a commitment to be in businesses only where it is No. 1 or close to it. Explaining the project is Keith Carpenter, a Brooklyn, N.Y.-based vice president in charge of managing the Workspace project for Chase Treasury Solutions.

WHAT IT IS

Workspace, which uses public key cryptography with digital signatures, is the first application in Chase's new Global Customer Access Architecture. The initial Web applications will be aimed at corporate treasurers who want to review information such as balance and transaction activity from the prior day. This information is typically reviewed daily, and clients pay for the service. Later, that same architecture will be adapted for investment services used by portfolio managers and asset managers.

HOW IT WAS WRITTEN

There are four pieces to the application.

Wire payment involves corporations paying their bills or moving money through organizations such as the Federal Reserve System. It is typically used for same-day payment within a few hours or minutes or for higher-dollar-value payment. The bank wrote this piece in Java.

Automated clearinghouse payments are typically used for overnight payments such as payroll or federal and state tax payments. A vendor developed this part of the application. It is written in HTML using Active Server Pages from Microsoft and the J Script scripting language.

A server-based report writer also comes from an outside vendor. Instead of preparing reports in straight text files, it creates report objects. One of the big pluses is the reports are then staged at the server rather than accessed one page at a time, as in a standard Web server arrangement.

The bank wrote the integrated security for the application in Java.

TECHNICAL CHALLENGES

The project pushed the state of the art for deploying Java applets using CORBA. When the bank decided to use Java, neither Netscape's nor Microsoft's browser supported the Sun Java Development Kit 1.1.2. As a result, the bank had to work with Netscape Communicator 4.0 betas.

Chase Manhattan's Keith Carpenter: 'We were pushing the edge of the technology ... You must keep up with new versions as they come along.'

"There also were coordination issues," Carpenter says. "We were pushing the edge of the technology, and when you do that you must track what the vendors are doing, and you are dependent on how successful they are. And you must keep up with new versions as they come along."

Another challenge was that the deployment of CORBA across a protected firewall was something vendors had hardly thought of. The problem was that it didn't work; the vendor assumed the user didn't have to go through a firewall. The bank's solution was to fix the code so it did work through the firewall.

ADVICE

Carpenter wholeheartedly recommends Java. He says it already works well enough for the bank to complete its application and will only work better in the future.

WHAT'S ONLINE

For the full interview with Keith Carpenter and RealAudio clips, visit www.computerworld.com/intranets

Alexander is a freelance writer in Edina, Minn.

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The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

GREAT EXPECTATIONS

What CEOs think about electronic commerce:

It will completely reshape how we do business: 20%

It will significantly change business: 59%

CEOs who use the Internet for tasks other than E-mail: 64%

CEOs who were online more than 10 days the previous month: 27%

Base: 377 CEOs from the world's 2,000 largest companies; multiple responses allowed

Source: Price Waterhouse LLP, New York

Verifying visitor info

Net.Genesis Corp. in Cambridge, Mass., said its Net.Analysis Pro software now supports standards set by the Audit Bureau of Circulation's (ABC) interactive division. That means reports generated by Net.Analysis about site traffic meet ABC guidelines to perform tasks such as filtering out "Web crawler" hits and internally generated visits to a site.

'net videoconference

Videonics, Inc. in Campbell, Calif., has announced plans to bundle Microsoft Corp.'s NetMeeting videoconferencing software with its Python video-capture software. Python grabs video from camcorders, desktop cameras and VCRs and creates compressed MPEG-1 files. With the addition of NetMeeting, Python users will be able to hold face-to-face conversations over the Internet. Pricing is $349.

Cache on the barrel

IBM has announced the IBM Web Cache Manager, a storage server box that sits between users and the Internet and caches frequently requested World Wide Web pages or graphics for faster delivery. It uses both disk and IBM Magstar tape for cache and includes IBM's Adstar Distributed Storage Manager. It is due in September.

Web page beats paper for book club

By Sharon Machlis

THE BOOK-OF-THE-MONTH Club, Inc.'s World Wide Web site makes it easier for customers to *not* place an order.

That isn't the usual strategy for a direct marketer going online. But to offer more convenience to its 1 million-plus members, Book-of-the-Month now allows them to decline the month's main selection on the Web. Before the Web, members had to mail back a card saying they didn't want the selection, or it was automatically mailed to them.

DIRECT MARKETING

However, it turns out the company's good deed did not go unrewarded. Orders placed online average almost one book more than those that come through the mail. "I think we have something here," laughed Michael Curry, vice president of new media at the New York-based firm.

Curry and Brad Reisner, director of technology and development, speculate that online customers order more because they have more choices. Book-of-the-Month paper catalogs, which are mailed 17 times per year, have about 30 new titles and 200 past offerings. That's "all we can afford in the economics of postage and paper," Curry said. On the Web site, with its near-limitless space, customers can choose from 3,200 selections — which feature longer descriptions of each book, author biographies, editor comments and the like.

So even when members intend to say no to a selection, letting them do so online pushes them to the site — where they may be tempted to buy something else. "A nice, unintended benefit," Curry said.

The 72-year-old Book-of-the-Month Club

initially went online in part to "enhance and modernize the brand," Curry said, as well as to sign up new members online. "We get

Book club, page 44

Mazda intranet drives good service

By Carol Sliwa

EVERY WEEK or so, Mazda prepares bulletins with the latest vehicle service and repair information for its 840 North American dealerships. But the dealers often don't see those documents for 10 to 12 days because printing and distribution take time.

The Japanese automaker also puts together extensive workshop manuals to help mechanics in the field repair vehicles. But it takes three to four weeks to get them into mechanics' hands.

So Mazda is posting that material online, which gets manuals to dealers in a matter of days and shoots out service bulletins

Company: Mazda
Headquarters: Hiroshima, Japan
U.S. headquarters: Irvine, Calif.
North American dealerships: 840
Electronic Service Information Intranet pilot: 100 dealers

within hours of final approval. Mazda has rolled out the system as a pilot test to 100 North American dealers and plans to extend it to the other 740 by year's end.

Although Gateway Mazda in Aurora, Colo., isn't yet part of the pilot program, service manager Dave Worster can foresee the benefits of an intranet-based system. "Anytime you can easily point a guy in the right direction, that would be a benefit to me," he said. "Heck, I've got a four-inch-thick loose-leaf binder for just '97."

And that's just service bulletins. The manuals are even thicker. "Pages get torn out of books, grease can get poured on them and some books are missing altogether," Worster said

Mazda, page 44

Uncle Sam gets friendly

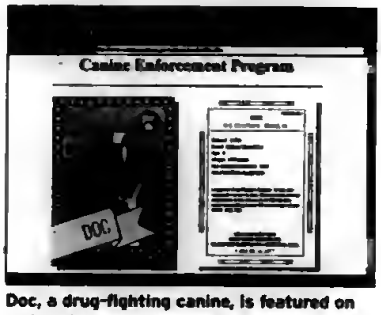
▸ *U.S. Treasury Web site teaches lessons to kids — and webmasters*

By Matt Hamblen

THE U.S. TREASURY DEPARTMENT gave taxpayers the Internal Revenue Service. Now it is giving kids an alley cat named Trez, who also serves up lessons for grown-ups in building audiences for Web sites.

As the host of a children's World Wide Web site (*www.ustreas.gov/kids*) sponsored by the Trea-

Uncle Sam, page 44



Doc, a drug-fighting canine, is featured on a kid-oriented Treasury Department Web site

ONLINE EDUCATION

Bank takes intranet to class

By Thomas Hoffman

IT WAS CONVENIENCE as much as cost that drove Richmond, Va.-based Crestar Bank to move its training to an intranet.

The bank wanted to centralize the distribution of more than 80 computer-based training (CBT) courses that are designed to teach everything from regulatory changes to customer service to 9,200 employees.

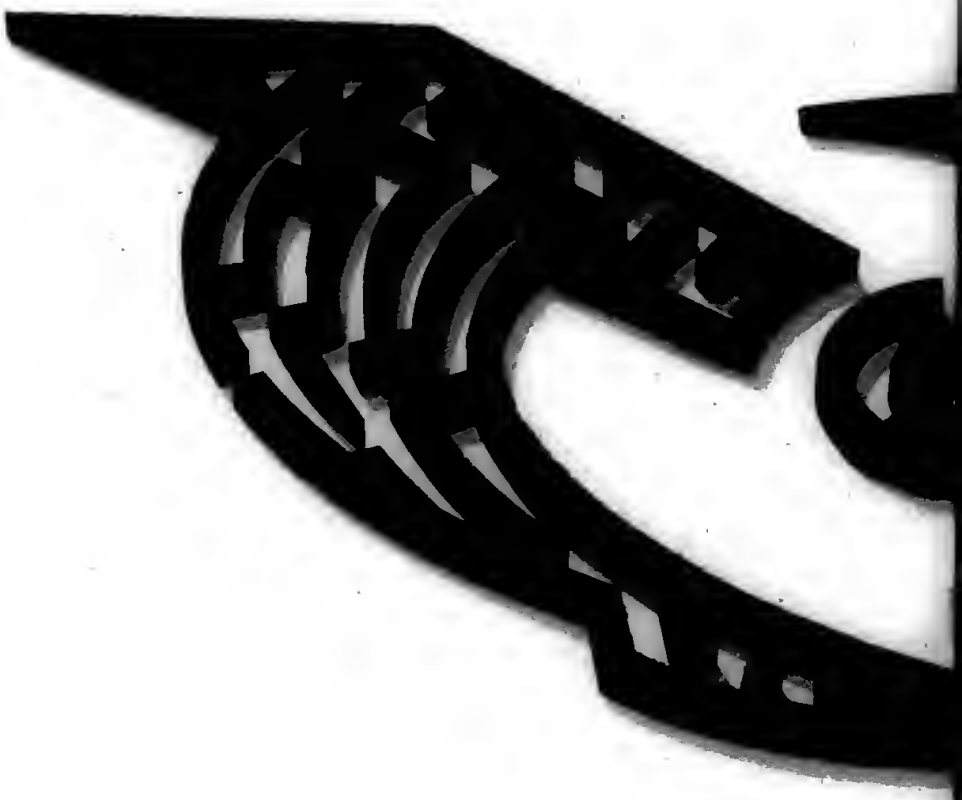
Technical shortcomings of its text-based mainframe systems prevented the bank from offering a Windows-type graphical user interface and from delivering multimedia to student desktops.

And the logistics of distributing the LAN server-based courses it did offer didn't work, said Mary Ellen Winks, corporate training manager at Crestar, which has 477 offices in Maryland, Virginia and Washington.

Each time Crestar needed to modify the LAN-based CBT courses it used for its commercial banking division, the

Crestar, page 44

Confusing the hell out of



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Who's watching your network

Book club turns page on Web

CONTINUED FROM PAGE 41

about two-thirds of our new members through direct mail, which comes at a cost," he said.

Other new members come from ads, word of mouth — and now, online. So far, the Web site has garnered a "couple of thousand" new members — and that's before any major online advertising campaign. "We feel there is real potential here," Curry said.

Online, direct marketers with a well-known real-world brand can "build on a name, which gives them an immediate advantage," said Edward Bergman, director of electronic business at Price Waterhouse LLP in Morristown, N.J. And with an existing order-fulfillment operation and an information-based business, companies such as Book-of-the-Month Club "have an opportunity to really leverage the capabilities of the channel and its strengths."

Eventually, the club will do a survey to see if members would like to conduct all their business on the Web and no longer receive paper catalogs by mail — saving the club an enormous amount of money, Curry said.

The site's popularity has risen for four straight quarters, each time doubling the total number of books ordered from the prior period, he said.

The site (*www.bomc.com*) runs on Sun Microsystems, Inc. Solaris systems using a back-end database and Web application server from Oracle Corp.

Book-of-the-Month Club joins an increasing number of direct marketers moving to electronic commerce. Online sales to consumers from direct marketers rose from $250 million in 1996 to an estimated $600 million last year and may reach $11.7 billion by 2002, according to a study commissioned by the Direct Marketing Association (DMA) in New York. More than 80% of direct marketers have Web sites, and 86% of them expect those sites to increase company revenue, the DMA said.

Book-of-the-Month Club also is working on automating its online orders, which currently go first to a customer service representative who confirms each order before it is shipped.

By the end of the quarter, the club hopes to add logic to the site that would let online requests go directly to the company's mainframe for processing.

The ultimate goal is to have customer service representatives deal only with customer inquiries, not orders. □

Mazda drives service

CONTINUED FROM PAGE 41

from another dealer or buy another book," he said.

Mazda is using its existing IBM Global Services wide-area network as the backbone for an intranet that lets technicians access those documents through a World Wide Web browser.

Because every North American dealer already is hooked into the network, using secure, dedicated lines to order cars and parts, Mazda officials figured it wouldn't be difficult to extend that communication network to deliver service information quickly.

The company still publishes the documents on paper as well as on its intranet site, but the long-term goal is to eliminate the bulky and expensive paper versions, said Mike Radulovich, service and parts publications manager at Mazda.

With the manuals alone, that could save printing and distribution of at least 8.5 million pages per year, he said. And with an intranet, the company can update documents without worrying about distribution.

Technicians can easily search the documents, and they also can send feedback via electronic mail.

SGML OVER HTML

Because the Environmental Protection Agency is considering requiring that carmakers use the Standard Generalized Markup Language (SGML) to disseminate information, Mazda figured it "could kill two birds with one stone" by adopting that format for its documents, rather than the more commonly used Hypertext Markup Language (HTML), Radulovich said.

SGML allows for more fine-grained tagging and categorization than HTML.

"SGML requires a lot of discipline to implement effectively. The benefits, however, can be extremely high, especially in an organization that is trying to manage lots of specifications and complex parts relationships," said Tim Sloane, an analyst at Boston-based Aberdeen Group, Inc.

"You're able to update all of the information related to a particular component almost instantly, and you eliminate all the manual processing normally needed to update all of your documentation," he said. □

Uncle Sam gets friendly

CONTINUED FROM PAGE 41

sury, Trez greets visitors and introduces them to virtual tours of famous buildings, interactive games and "Doc," the Customs Service drug-sniffing Brittany spaniel mix credited with 85 drug arrests.

Designed to be fun and educational, the award-winning Treasury site holds some lessons for businesses trying to grow audiences for their Web sites, officials said.

"By comparison, television networks typically start with programming for children and age the content as their audience grows older," said Rick Villars, an analyst at International Data Corp. in Framingham, Mass. Other industries, such as fast-food chains, have long depended on starting out with a young audience.

Businesses and government agencies can use kids' sites to dispel some of the myths about what they do, as well as build a constituency for the future, said Edward Kinney, a Treasury Department program manager.

OTHER DUTIES

"Many people think the Secret Service only protects the president. [They] don't know it investigates counterfeiting," Kinney told a government conference on technology recently. But the Treasury Kids' Page can improve understanding, he added.

"It helps if people, who are paying for government, understand government better. These young viewers will be constituents and may even work here someday," Kinney said.

The site has 13 tabs that describe department functions, from dispersing savings bonds, to printing and minting money, to performing customs inspections. One tab links to a site that will compute the redemption value of a savings bond based on its years of maturity.

So the site teaches about money and investing as well, which is important to a future understanding of many of the other Treasury functions, Kinney said.

This spring, the U.S. Department of Education will unveil an extensive site devoted to general education — putting less emphasis on how the department functions.

The Education Department already uses the Internet to send weekly electronic-mail summaries of education news to 48,000 subscribers, said Kirk Winters, co-chairman of the Internet Working Group in the department.

The new site — no URL is available, yet — will allow downloads of course materials for teachers and access to National Library of Education files, he said. □

Crestar Bank chooses intranet for training

CONTINUED FROM PAGE 41

bank's technicians had to install new versions of the courses on more than 30 LAN servers, an effort that took several weeks, Winks said. "If we tried to do this companywide with hundreds of servers, it would have been a nightmare," she added.

"It would have been a nightmare" for Crestar to modify its CBT courses across hundreds of LAN servers

That challenge, plus the lack of multimedia support in the mainframe system, led Winks and her team to the Phoenix for Windows system from Columbus, Ohio-based Pathlore Software Corp. The system, which Crestar licensed in November, will allow it to develop and "stream" multimedia-based CBT courses over its corporate intranet beginning midyear, when the new courses are finished, Winks said.

Dana Franz, a sales process manager at Crestar Direct, the bank's call center unit, said she hopes the multimedia-based training system will increase the amount of information that students retain from their courses.

"Adults have the attention span of small children," said Franz, who added that the previous mainframe-based CBT "would put you to sleep in a heartbeat."

Students will be able to access Crestar's intranet home page, select a training icon and register for courses online, Winks said.

MARKET RIVALS

Brandon Hall, editor and publisher of "Multimedia & Internet Training Newsletter" in Sunnyvale, Calif., said there are several products on the market that offer the same kind of administrative support as Phoenix, such as registering students online, including the Pathware system from Macromedia, Inc.

Hall said Crestar is among the more innovative companies adopting intranet-based training systems.

Winks declined to say how much Crestar invested in Phoenix and what kind of return the bank expects from its investment.

But she did say the new system will eliminate the need to pay contract developers to build administrative features such as the ability to track student enrollment to its LAN server-based CBT systems. Those costs previously ranged from $110,000 to $315,000, "depending on how many bells and whistles we wanted," Winks said. □

The Enterprise Network

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Briefs

INTERNET ADVANTAGE

Many end users find their E-mail isolated . . .

Messaging managers who use the Internet to send and receive E-mail: 79%

Employees at those companies with Internet E-mail privileges: 44%

Base: 180 messaging managers at U.S. and European companies

Source: International Data Corp., Framingham, Mass.

. . . and themselves in the dark

Percentage of companies with:

No training in proper use of E-mail: 49%

No written E-mail policy: 48%

Base: 757 human resources professionals

Source: Society for Human Resource Management, Alexandria, Va.

Show yields interest

A survey of 447 attendees at the recent ComNet '98 conference in Washington gave some insights into users' buying plans. The product categories attendees were most interested in were internetworking/switching (55%) and network management (47%). Remote access offerings were also of high interest (35%). Of the attendees interested in owning internetworking/switching products, 65% plan to buy routers in the next year, 59% plan to buy hubs, 52% plan to buy Ethernet switches and 48% plan to buy Asynchronous Transfer Mode switches.

E-mail from the game

MCI Communications Corp. has installed 60 of Nortel, Inc.'s Millennium MultiPay telephones and MultiApplication terminals at the MCI Center in Washington. The sports and entertainment venue, which opened in December, is home to the National Basketball Association's Wizards and the National Hockey League's Capitals. MultiPay phones have an RJ-11 data jack that connects to laptops.

An investment in uptime

▸ *Stock exchange expands route diversity*

By Laura DiDio
SAN FRANCISCO

BACKHOE ACCIDENTS on three successive days last summer failed to bring down the network at the Pacific Stock Exchange. But those incidents did show the company it wasn't getting the reliable telecommunications service it paid for.

On July 16, construction workers in Barstow, Calif., near the Nevada border, inadvertently cut a major fiber backbone, severing two of the Exchange's three T1 links to New York and California. The backbone was repaired quickly, but on July 17, construction near Baltimore took out the exchange's other T1. It also was repaired. Then on July 18, another backhoe in Barstow again severed the fiber trunk that carried all of the exchange's trade information between California and New York.

The network should have been unscathed because the exchange bought each T1 link from different carriers, all of whose fiber cables presumably would take different routes. Instead, for three days, all the traffic between the exchange's San Francisco headquarters and its New York offices wound up

Investing, page 49

"A network outage of even 30 to 60 minutes could cost us millions in lost trade."
– Dave Eisenlohr
Pacific Stock Exchange

Network traffic gets directions

▸ *3Com upgrades let users allocate precious bandwidth*

By Bob Wallace

3COM CORP. plans to release a series of software upgrades that will let users pick what kinds of data move fastest across their networks.

3Com officials said the company's TranscendWare technology can help network managers guarantee performance of critical business applications. Managers will be able to guarantee performance of lifeblood business applications while reducing the time staffers spend on performance management.

For example, traffic from mission-critical SNA applications and SAP AG R/3 applications could be assigned the top of eight priority levels to guarantee them sufficient bandwidth. Less important PointCast, Inc. and World Wide Web traffic could be assigned a lower priority and contend for what bandwidth, if any, is left over.

But TranscendWare works only with the latest wave of

3Com, page 48

3Com's TranscendWare timetable

Component	Due date
Software download for desktop and server interface cards	First quarter
Software download for LAN switches	Second quarter
Transcend Policy Manager & Server ships	Third quarter
Scheme for mapping priorities from packet switches to ATM	Fourth quarter/ first quarter 1999

MIGRATION TOOLS

Exchange users still looking to third parties

By Barb Cole-Gomolski

ALTHOUGH MICROSOFT CORP. now is bundling more migration tools than ever with its Exchange messaging and groupware server, some companies continue to look to third parties for those products.

The need to preserve detailed information locked up in legacy mail systems still has information systems departments looking for more robust tools, according to a systems analyst at United Services Automobile Association, who requested anonymity.

The San Antonio-based insurance company used West Chester, Pa.-based I/G OpenWare, Inc.'s Direct-To-1 tool during its migration. The goal was to preserve underlining and

Exchange, page 49

NetWizard management functions now run as services beneath Windows

Broader role for PC manager

▸ *Attachmate NetWizard promises remote, registry control*

By Patrick Dryden

ATTACHMATE CORP. hopes to elbow its way into the elite clique of leading PC management software vendors by promising broader control over Windows 95 and Windows NT stations.

The Bellevue, Wash., vendor launched the NetWizard suite four years ago to install and maintain the company's host and remote LAN access software on distributed PCs. Last week, it shipped Version 4.0 of NetWizard Plus with enhancements for 32-bit operating systems. The enhancements were designed to help non-Attachmate users.

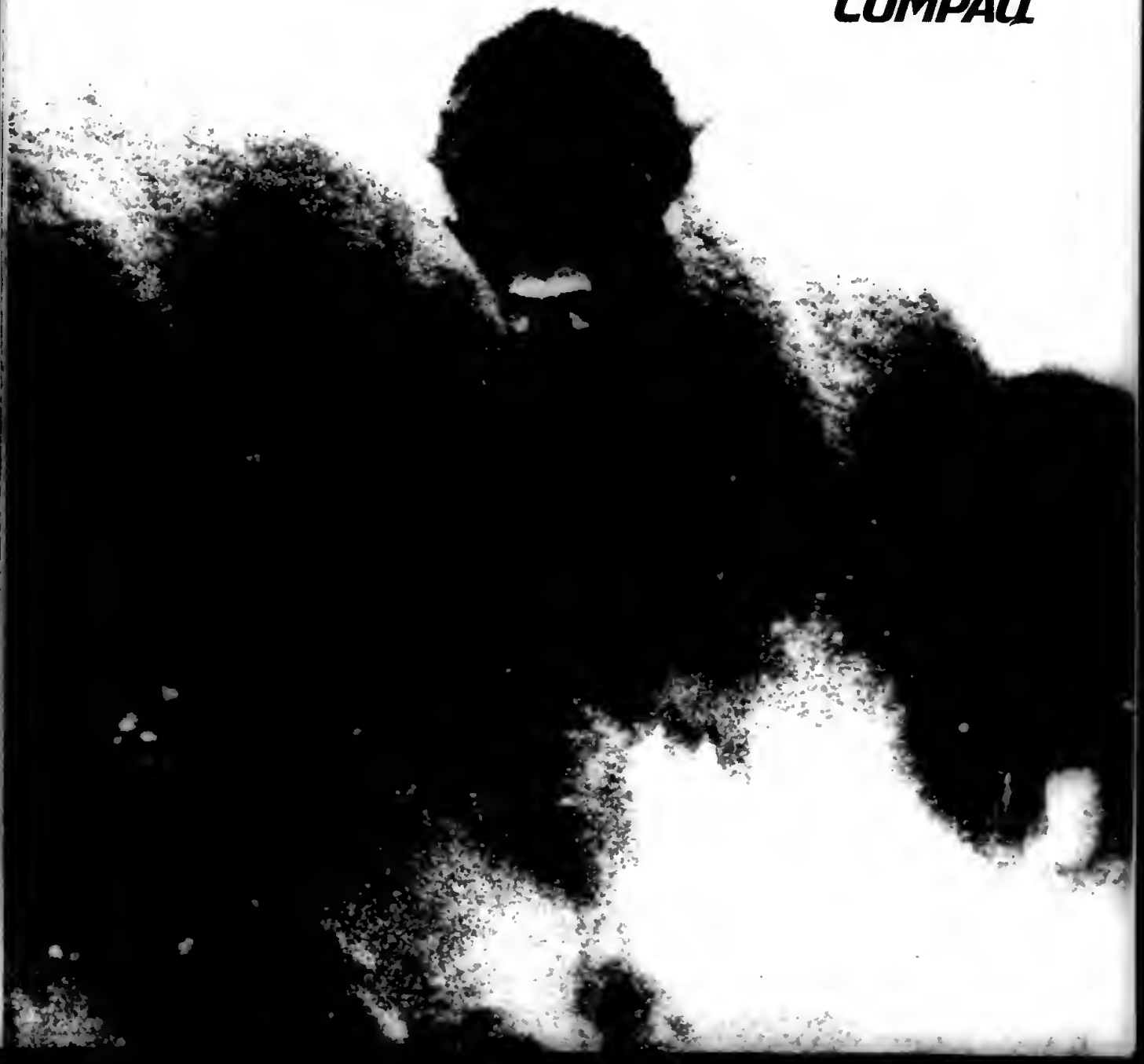
In the new version, NetWizard management functions run as services beneath Windows, not as applications. That means central operators can reconfigure remote PCs even when users aren't logged in, and they can better control tasks such as software distribution

Attachmate, page 49

MMX
intel inside
pentium-II

Whatever you decide to call it, the shift from proprietary UNIX workstations to industry-standard Compaq Professional Workstations has been remarkable. Only 15 months after entering the market, we shipped our 100,000th workstation. A feat that took Silicon Graphics eight years to accomplish and Sun Microsystems six years. Our full range of Compaq Professional Workstations is optimized to run the most demanding business, technical and creative applications thanks to our platform partnerships with leading subsystem providers like Microsoft and Intel. These workstations are designed with our innovative Highly Parallel System Architecture, which delivers 1.07GB/s of application memory bandwidth. This industry-standard architecture gives you performance you never thought possible from a Windows NT system and allows your users to run demanding applications without compromise. You will get a longer lifecycle when you repurpose these workstations for other business use. Plus the same level of serviceability, manageability, quality and reliability you've come to expect from our server and PC products. Would you expect less from the world's leading provider of computers? Visit us at www.compaq.com/products/workstations.

COMPAQ



3Com traffic prioritization

CONTINUED FROM PAGE 45

switches from 3Com and others. There is no way to upgrade older LAN switches to support TranscendWare

"This presents a bit of a dilemma," said Rob McKenna, vice president of global network engineering at Sumitomo Bank Capital Markets, Inc. in New York, which uses 3Com switches. "Since TranscendWare is not supported on the switches we use today, we'd have to replace them to implement the technology."

Luckily, McKenna has budgeted for newer 3Com switches this year that will support TranscendWare, but he isn't sure he will use TranscendWare once the newer switches are in.

"The switches we plan to install may be robust enough that we don't need TranscendWare," he said. "But if the traffic load on the switches goes up, there would be an advantage to TranscendWare." In that scenario, McKenna would give top priority to market-data feeds for traders, while assigning lower priorities to electronic mail and Internet traffic.

To use TranscendWare, most companies will need free software upgrades for their PC and server adapter cards and for their 3Com switches. Non-3Com switches that comply with the IEEE 802.3p specification and support queuing also can use TranscendWare. 3Com will charge users with non-3Com adapter cards a "nominal" fee for the software. TranscendWare software will be made available over the next several quarters.

3Com will offer a two-server package that will enable IS managers to define what traffic gets priority. The priorities are then sent all at once to network devices. One analyst applauded 3Com for not making TranscendWare a 3Com-only scheme.

"There's no requirement for companies to have 3Com products end-to-end to use TranscendWare," said John Morency, an analyst at Renaissance Worldwide, Inc., a Newton, Mass., consultancy. "That's important because many users have multivendor networks." The 3Com approach is broader than similar schemes from Cisco Systems, Inc. and others, he added.

Companies can implement TranscendWare in parts of their networks where they have the latest 3Com LAN switches.

Users will be able to extend TranscendWare traffic prioritization from the campus out over private wide-area networks. They will be able to support it over public packet networks as carriers implement routers that can recognize and process packets marked with so-called Type of Service (TOS) bits. TOS bits indicate what priority each packet has been assigned.

Router market leader Cisco already has shipped software that initially lets its 7200 and 7500 routers process TOS bits at high speeds to carriers and Internet service providers.

Supporting TranscendWare over mixed packet and cell networks is another story. 3Com is working on a way to accommodate mixed networks but doesn't expect a solution until year's end or early 1999. □

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APC

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PowerChute plus for Novell NetWare	Q4 1998
PowerChute plus for OS/2	Q4 1998

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NEW PRODUCT

SECURE COMPUTING CORP. has announced Secure Computing Firewall for NT 3.0, firewall software integrated with Windows NT.

According to the St. Paul, Minn., company, the firewall features virtual private networking capabilities and uniform resource locator filtering.

A 50-user license costs $3,000, a 200-user license costs $7,000, and an unlimited-user license costs $11,000.

Secure Computing Corp.
(800) 379-4944
www.securecomputing.com

Investing in uptime

CONTINUED FROM PAGE 45

on the same line, which balanced all the business of the nation's third-largest stock exchange on a single cable

For three days, the exchange's network was riding on a single line. "Needless to say, we were extremely nervous because, if the Barstow and Maryland incidents had occurred on the same day, we would have had to halt trading," said Dave Eisenlohr, vice president of data center operations.

"As a stock exchange, reliability is and has always been the most important aspect of our network setup," he said. Like most transaction-oriented businesses, "our profitability is directly related to the reliability of our systems and networks," he said. "A network outage of even 30 to 60 minutes could cost us millions in lost trades. Downtime is not an option for us."

In the past, the exchange's strategy was to diversify its network connections. No single point of failure was permitted.

Instead of putting all its bets on a single large T3 link, it used several T1 lines, all from different carriers. Network administrators from the exchange routinely inspected — in person — the links and routes its traffic was taking.

But they didn't investigate how the carriers handled spare bandwidth.

Over the past several years, carriers including AT&T, Sprint Corp., MCI Communications Corp. and Cable & Wireless PLC improved their systems for managing growing traffic congestion by rerouting user lines onto lines with spare capacity to accommodate outages.

In the past, the Pacific Stock Exchange's strategy was to diversify its network connections.

But the Pacific Stock Exchange didn't know that its carriers leased spare capacity on its backbones to other carriers, several of which rerouted their lines through the same concentration points. Fiber from both Cable & Wireless and WilTel ran through Barstow. In Baltimore, Sprint and Cable & Wireless lines converged. But the excess capacity meant little when the lines got cut.

After investigating, exchange officials decided the carriers couldn't coordinate with one another to guarantee diverse routing paths.

In response, exchange officials revamped the network and installed excess capacity — four times more than needed. "We only need 25% of a single T1 line to do our trades," Eisenlohr said. It also got the carriers to guarantee they could ensure route diversity — or lose the exchange's business.

The exchange offers the following capacity planning tips for maximum uptime:

- Don't cut costs by pooling all leased lines into a single "big pipe."
- Contact carriers for guaranteed diverse routing.
- Order twice as much network capacity as your business needs.
- Investigate primary rate ISDN dial backup if excess capacity is too costly.
- Make sure you have tools to alert you to simultaneous line outages.

"In a worst-case scenario in which all of the carriers have inadvertently routed one of their circuits through the same path, a failure would take out no more than 50% of our capacity," Eisenlohr said.

Mary McCaffrey, an analyst at Bankers Trust Alex. Brown & Sons, Inc. in New York, said the Pacific Stock Exchange's business plan is one of the most prescient in the trading industry.

"You can't have too much capacity or be too careful — not when millions of dollars and your business are riding on a T1 line that could go down at any time due to an act of God or the phone company," McCaffrey said. "Anticipation beats regret." □

Attachmate NetWizard

CONTINUED FROM PAGE 45

by interacting with each station's registry.

But getting recognition for NetWizard won't be easy, according to analysts, even though information systems managers crave ways to reduce the cost, complexity and hassles of controlling far-flung PCs.

NEW CHALLENGE

"Attachmate must overcome the momentum of established workgroup management products to be a contender," said Chip Gliedman, a management analyst at Giga Information Group in Cambridge, Mass. "Even though they have a long track record with this product for supporting their own communications software, they aren't known for solving PC management problems."

Other vendors provide integrated suites of tools that provide functions such as remote PC control and configuration, software distribution, hardware and software inventory, software metering and virus scanning.

The leaders include Intel Corp., which offers the LANDesk Management Suite; Microsoft Corp., which is testing Systems Management Server 2.0 for release this fall; Network Associates, Inc., which is combining tools from the former McAfee Associates, Inc. and Network General Corp.; and Hewlett-Packard Co., which acquired the Norton Administrator for Networks from Symantec Corp. and enhanced it as OpenView Desktop Administrator.

"NetWizard was our first exposure to such suites," said Patrick Hanner, senior business development manager for federal systems integrator Severn Cos. in Lanham, Md., which works under contract for the Social Security Administration.

Initially, NetWizard merely helped Severn's staff set up Attachmate's Remote LAN Node so that laptop-equipped users could dial in to work as if they were using LAN-attached stations anywhere on the agency's backbone. Now the Social Security Administration is licensing the suite for 2,000 laptops to help its help desk, Hanner said.

"This saves the time and expense of returning laptops to make configuration changes and add or update software," Hanner said.

NetWizard Plus 4.0 is available now for $99 per client. □

MAKING THE EXCHANGE

Some providers of migration tools for Microsoft Exchange:

Company/Product	E-mail systems supported
Microsoft	Microsoft Mail, Lotus CC:Mail, Novell GroupWise, Netscape CollabraShare, Verimation Memo, Digital All-In-1 and IBM Profs
I/G Openware Direct-To-1	Any MAPI-compliant system
Wingra Technologies Missive	Mainframe and midrange E-mail systems, CC:Mail, Microsoft Mail and Novell MHS

Exchange support

CONTINUED FROM PAGE 45

boldface type in the text of the legal department's electronic-mail messages, which were to be ported from a mainframe-based system. Before Direct-To-1 was brought in, "we were losing too much detail," the analyst said.

Migration tools make it possible to bring E-mail messages, directory information and, often, formatting commands from an old E-mail system to the new system.

MIGRATION TOOLS

With Exchange, Microsoft includes software to move information from its own Mail system as well as Lotus Development Corp.'s CC:Mail and several other E-mail systems (see chart above). In addition, some messaging vendors — including Hewlett-Packard Co. in Palo Alto, Calif., — offer tools for customers who need their E-mail system to co-exist with Exchange.

FILLING GAPS

Then there are the third-party migration tool providers (see chart). They fill gaps left by the messaging players. For instance, whereas most migration tools are aimed at E-mail administrators, Direct-To-1 lets end users plan the migration of their personal mailboxes. Madison, Wis.-based Wingra Technologies, Inc.'s Missive supports about 150 types of database, graphics, spreadsheets and text file formats to help migrate E-mail attachments along with the messages.

"If you're just looking at straight E-mail translation, [the capabilities in Exchange] are pretty robust," said Marion Weiler, senior messaging technologies at Chevron Information Technology Co. The San Ramon, Calif.-based IS branch of Chevron has moved 29,000 users to Exchange. "But if you need to do directory synchronization, that has to be thought through," he said. Weiler said companies can achieve a decent level of interoperability by using messaging protocols such as the Internet's Simple Mail Transfer Protocol (SMTP). "But if you need [to preserve] things like rich text, you may not get that with SMTP," Weiler said.

Chevron moved from Microsoft's Mail, IBM's Office Vision and a Unix-based mail package. "We didn't really use third-party tools," Weiler said. Instead, the oil giant relied on the migration tools and wizards that Microsoft provided and did some custom programming to preserve specific information, he said.

Jonathan Penn, an analyst at Ferris Research, Inc. in San Francisco, said E-mail vendors, including Microsoft, now understand that migration tools are vital to users. But he said the tools Microsoft gives away are inferior to many third-party products, partly because third parties put more effort into developing migration tools.

"I don't think Microsoft will put that much effort into providing superior tools," Penn said. "I'm basing this on past history and the fact that people don't make the decision to move to Exchange based on the [quality] of Microsoft's migration tools."

"I see a lot of need for niche players who sell migration tools for Exchange," said Kirk Reeves, a systems engineer at the Kentucky Department of Education in Frankfort, which has more than 200,000 Exchange mailboxes statewide. "A lot of times, what the messaging vendor provides is not as complete as the third-party [products]." □

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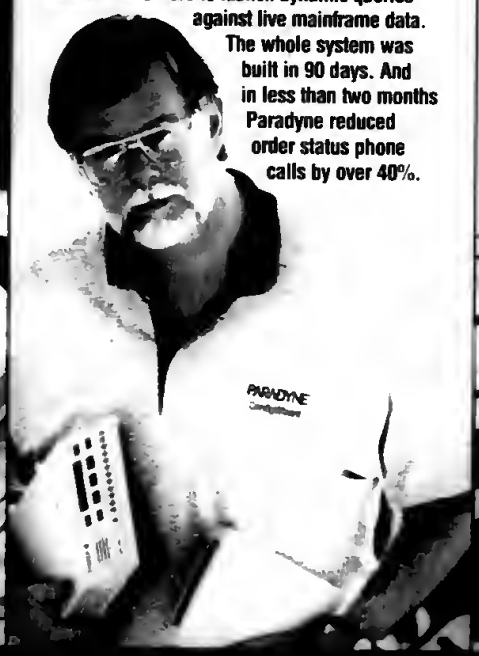
Information Builders helped us prototype a home banking system in two weeks.

Using Information Builders Cactus and EDA middleware Grupo Financiero Bita in Mexico City is able to quickly create applications that provide managers and customers with Web access to its mainframe transaction and financial systems

"In less than two months, we reduced order status calls by 40%, enhanced customer relations, and stimulated new business by driving customers to our Web site."

Dan Bond, Data Warehouse Manager, Paradyne Corporation

Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne built a Web-based order status system that allows customers to launch dynamic queries against live mainframe data. The whole system was built in 90 days. And in less than two months Paradyne reduced order status phone calls by over 40%.



"Our nation-wide dealer network can now use the Web to order parts from our SAP® R/3® system."

Jaime Flores, Software Manager, VW-GEDAS, Volkswagen of Mexico

Using Cactus development tools and EDA middleware, Information Builders helped Volkswagen of Mexico build an internet parts ordering system that is expected to reduce dealer parts inventory to save $50 million over the next three years. The application, which provides Web access to SAP® R/3® was developed in under eight weeks.

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Eduardo Fernandez Managing Director of Information Services RENFE

Using Information Builders' WebFOCUS reporting engine and EDA middleware, RENFE publishes up to the minute train schedules based on live, dynamic data from multiple databases, including legacy data. Anyone with a standard Web browser can determine exactly when any train in the system will arrive at or depart from any destination...even if the train encountered unexpected delays. The new system has virtually eliminated the expense of creating and maintaining over 6,000 pages of static train timetables. And the thousands of hits on their Web site has produced valuable marketing demographics as an added bonus

"We found WebFOCUS to be a fast, cost-effective solution for deploying our data warehouse on the Web."

Gary Fisher Manager Strategic Systems Sony Electronics Inc

Sony Electronics Inc. decided to build a data warehouse to help manage and control its inventory. To make the information easily available to users in over 20 states throughout the U.S., the company wanted to build Web front ends for reporting and analysis. The company needed software that had report writing features, supported drill down, graphics and complex, multi-pass database queries Sony looked at a variety of Web-based tools ranging from the very complex and expensive to the simplistic and inexpensive. The company installed WebFOCUS and had reports on their Intranet in days and drill down reporting systems in weeks without writing SQL, CGI, HTML, JAVA, or PERL. Using WebFOCUS, Sony's data warehouse developers can now quickly generate Web reports and connect users throughout the U.S. with a URL, an ID, and a password.

"With our new intranet-based decision support system we are able to roll up budget projections in less than 10 minutes."

Kevin Rasmussen Expert App[illegible] Gulf Canada

In the oil and gas business proactive monitoring of production and costs versus operating budgets is a mission-critical function That's why Gulf decided it needed a faster way to collect and analyze this information from its field locations around the world. The solution... a Web-enabled data entry and reporting system using Information Builders' Cactus and WebFOCUS. The application, which required almost no training, lets each location update Gulf's databases right over the corporate intranet. Analysts can now roll up the data in less than 10 minutes, create reports from their Web browsers, and evaluate the impact of regional decisions on the big picture

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Software

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Briefs

Knowledge server

Autonomy, Inc. in Palo Alto, Calif., has announced a knowledge management system expected to ship this spring. The product's core is the Autonomy Knowledge Server. It automatically categorizes and cross-references related information stored in various applications, such as spreadsheets, databases and groupware. That makes it easier for users to mine for corporate knowledge. It costs $50 to $100 per user.

Help desk monitor

Network Associates, Inc. in Santa Clara, Calif., has released Informant, an add-on to its Total ServiceDesk product that lets managers view help desk performance in real time. Informant offers graphical information such as the number of open calls and visual alarms. It is available free at *ftp.mcafee.com* for ServiceDesk users. Network Associates was formed by the merger of McAfee Associates, Inc. and Network General.

Biometric API

I/O Software in Riverside, Calif., hopes to introduce interoperability to biometric devices by releasing a standard biometric application programming interface (API). Biometric technology includes fingerprint scanners, vocal and facial recognition systems, and retina and iris systems used for personal identification. By adopting a standard API, software would work with any compliant device and eliminate the need for special drivers. The API technical specifications are expected to be available Feb. 28 at *www.iosoftware.com/bapi*.

Corel language tool

Corel Corp. in Ottawa has released a language kit for its WordPerfect 8 suite that lets users create documents in five foreign languages. The Language Module adds support for Corel's Office and WordPerfect 8. The module costs $49.99.

Reynolds foils forecasting errors

Reynolds' Hank Chewning: The company's demand-forecasting system gives it a much higher degree of precision when predicting customer needs

By Randy Weston

FOR THE REYNOLDS METAL CO., tinfoil that sits on a warehouse shelf is money drained from the bottom line.

So the company's food services division is using a new demand forecasting system to keep aluminum foil and plastic wrap moving from the company's production line to schools and restaurants worldwide.

Reynolds must manufacture according to the demand it forecasts, not from the orders it already has, said Dave Seibert, director of marketing for the food services division. "So we are rolling the dice when we put a product in a box, hoping customers will buy it," he said.

HIGH-TECH CRYSTAL BALL

Harry Tse, an analyst at The Yankee Group in Boston, said most process manufacturers — those who make goods from raw materials — depend on demand forecasting. Those companies must take a good look at forecasting software systems, he said.

Richmond, Va.-based Reynolds is using forecasting software from Logility, Inc. in Atlanta. The food services unit was already a customer of forecasting products from American Software, Inc., Logility's parent company, also based in Atlanta. That familiarity smoothed the installation of the Logility application, Seibert said.

Previously, Reynolds' food services division was

Reynolds, page 56

Magic works, and costs

▸ *Application development tool can unify systems*

By Howard Millman

I TEND TO RESIST one-size-fits-all software packages. But sometimes, as with Magic 8.0, they work as promised.

Magic Software Enterprises recently released Magic 8.0 Enterprise Edition, which can link to a variety of legacy and contemporary back-end data sources and operating systems, including midrange and PC server-based systems and mainframes.

Although it can be costly — a wide-area deployment can cost $70,000 — the product can generate an acceptable return on investment by reducing the need to support multiple development environments. Version 8.0 helps users move to a single environment with its expanded support for standard SQL syntax. And because Magic runs essentially the same middleware engine regardless of platform, you can apply it in all situations once you learn how to operate it.

This tool begs for a wizard or

Magic, page 57

PRODUCT REVIEW

▸ *Magic 8*

OVERALL GRADE B+

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Pros: Well-suited for developing high-volume transaction processing systems.

Cons: Tough for novices to learn. Costly.

PC APPLICATIONS

Union Pacific girds bridges with MathCAD

By Gordon Mah Ung

CALCULATING HOW STRONG to build a bridge girder that supports a 31 million-pound train is no easy task. Doing it by hand is even tougher.

At least, that's the way Union Pacific Corp.'s engineering department views it.

Until last year, engineers at the $9 billion railroad used hand calculations to audit numbers generated by a spreadsheet program. The process, which can take days for each calculation, was so overwhelming for the 16-engineer department that much of the work was farmed out to consultants.

"Tools like MathCAD enable us to do more design work in-house," said Gary Voogd, a senior structures designer at Union Pacific's engineering department in Omaha.

MathCAD 7 Professional is a Windows 95 PC application from MathSoft, Inc. in Cambridge, Mass. The product was a great relief for engineers who had just embarked on a lengthy nationwide project to upgrade timber bridges to concrete.

Union Pacific, page 56

TRACK FACTS

- **Union Pacific Corp.'s infrastructure program calls for an upgrade of 36,026 miles of track across 23 states and their respective bridges. One-hundred and sixty bridges per year are due for upgrades, from timber to concrete.**
- **The average weight of a 100-car coal train is 31.5 million pounds, not counting the locomotives.**

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Union Pacific leans on MathCAD

CONTINUED FROM PAGE 53

The department expects to upgrade 160 bridges per year across its system — 36,000 miles of track that spans 23 Midwest and Western states. At a cost of about $5,000 per foot, mistakes would be expensive.

"When designing a bridge girder, or anything in the field of civil engineering, you have to combine different load structures. The larger the structure, the more complex it is," Voogd said. "Going through a full range of calculations could take you weeks."

With MathCAD 7, Voogd said the railroad's engineers were able to keep their bridge design projects mostly in-house and cut calculation turnaround time from days to minutes.

MathCAD lets users sketch out problems and, using standard mathematical notations, tell the application how to solve them.

Jim Fox, Union Pacific's information systems director, said MathCAD isn't widely deployed but is an example of the railroad's efforts to use information technology throughout its operation. Union Pacific uses transponders to communicate data from computers on individual railcars and has implemented handheld PCs and bar-coding systems

The railroad also is ahead of schedule and under budget on its year 2000 project. MathCAD's competitors include Mathematica from Wolfram Research, Inc. in Champaign, Ill., and Scientific WorkPlace from Brooks/Cole Publishing Co. in Pacific Grove, Calif. □

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Reynolds foils

CONTINUED FROM PAGE 53

running 20-year-old forecasting software on an IBM 9672 mainframe. The new system runs on a Hewlett-Packard Co. NetServer LS 100, which runs Microsoft Corp.'s Windows NT. The old system limited the company's ability to introduce items. "We only had a once-a-month window to update the system. With the new system, we can update it on a daily basis if we wish," Seibert said.

Hank Chewning, business consultant at the food services division, said the forecasting application gives Reynolds a higher degree of precision when predicting customer needs

HOW IT'S DONE

First, the system loads information, such as sales history, that is used to predict the month's demand. That forecast is sent to a distribution planning module and merged with inventory and customer-order projections.

"Then we generate the requirements of when and where we need to ship a projected order," Chewning said. "This is given to the distribution people who build the load for the trucks. The people in the plants use the information to see what needs to be produced and where we need to produce it from a manufacturing standpoint."

The effort is having a positive effect on the division's bottom line. Chewning said forecast errors have dropped by 1% to 2%, to the low-teens. Error rates previously hovered in the mid-teens, he said. The numbers may not seem like much, but Chewning said each percentage point translates to about a half-million pounds of inventory "that we don't have to hold on to."

Seibert said 99% of the food services division's manufacturing plan is based on forecasts, so accuracy is paramount. The entire project, including hardware, cost less than $500,000. The system has been running solo for two months after three months of running parallel with the old system, and a 15-month planning and implementation period.

Reynolds' food services division plans to put the forecasting information on an extranet to let regional salespeople and even key customers access the data via a World Wide Web browser.

For example, a customer could review a forecast against its purchase plans to keep Reynolds' projections updated. □

Magic works, and costs

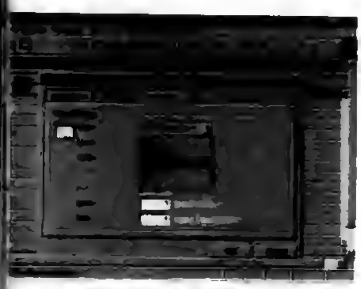
CONTINUED FROM PAGE 53

a highly interactive tutorial to lead the new user through its distinctive development method. Magic employs a proprietary table-based paradigm for building applications. For example, you build applications using table building blocks rather than by directly keying in code (primitive, yet effective) or by dragging and dropping.

Magic's interface is more difficult to navigate than Borland International, Inc.'s easy-to-learn and easy-to-use Delphi 3.0 [CW, July 21, 1997]. But Magic is on par with Powersoft's PowerBuilder Enterprise 6.0 [CW, Dec. 1, 1997]. Once you overcome Magic's initial learning curve, you may find the tool moderately easy to use.

While complete, the user documentation is nearly 900 Portable Document Format pages. Company officials said they are working on printed documentation.

On the plus side, with no code to compile or interpret, Magic delivers fast prototyping and testing. For example, you hit a key and the program executes whatever part of the program is completed to that point.



Magic's underlying technology is complex, but tasks are accomplished with menus and drag-and-drop icons

Magic's use of "logical" applications — applications that operate independent of the underlying physical environment — makes it easier to distribute runtime applications across multiple clients and Magic application servers.

Magic's Visual Control manages dynamic partitioning, a requirement for enterprise-class application development environments. It results in reduced network traffic, improved availability and enhanced application scalability. A non-CORBA-compliant Object Request Broker enhances load balancing and reduces network traffic. It handles online transactions among multiple clients and servers, and maintains application integrity for online and batch applications in asynchronous and synchronous modes. The product's underlying technology is complex, but tasks are accomplished with menus and drag-and-drop icons.

Magic's development and deployment capabilities include Java client generation and Java applet/component integration. By managing the runtime applications' presentation layer for Hypertext Markup Language (HTML), Java or a graphical user interface using all the same logic, Magic allows you to develop hybrid applications that run simultaneously on fat and thin clients. One especially well-implemented feature, a link/join from multiple databases, enables you to create cross-product, dynamic HTML reports that integrate static text with dynamic SQL data and graphical objects.

Magic's visual HTML form palette supports the use of popular HTML tags and controls. It includes Java applet control that helps to distribute client functionality and interfaces across the Internet while application logic remains secure on the server.

A new Dispatch Monitor (application monitor) provides an integrated view of client/server topologies throughout the enterprise. □

Millman operates Data System Services LLC, a consultancy in Croton, N.Y. He can be reached at (914) 271-6883 or hmillman@ibm.net.

Advertisement

Reliance for Security and Flexibility

Philippines Social Security System relies on the strength of PATROL to manage its distributed computing system

When the Philippines Social Security System (SSS) decided it needed a strong tool to manage the distributed Oracle databases and Unix servers across its nine fully functional data centers, it chose the PATROL product from BMC Software.

"Our aim was to stop the IT department from getting trapped in a cycle of systems failures which commonly occurred due to database errors and crashes. In addition, our huge database of applications, systems resources and files needed automated enterprise-wide monitoring and coordination along with proactive systems management to analyze and control the performance of our distributed computing environment," says Tony Maralit, manager, database administration group, SSS.

The SSS evaluated various products and found, with the exception of PATROL, they did not support all multiple platforms in the organization. In particular, PATROL was the only evaluated product that could support SSS machines running on DEC Ultrix.

"With PATROL's multi-vendor support, its ability to improve management efficiency and speed up system maintenance, through the automation of many routine tasks, it was the natural choice," Maralit explains. The SSS also took into account the strong local support and the technical expertise that would be provided by BMC Software's distributor Leverage Systems Technologies; and that with PATROL's product-specific modules, time and effort required to train staff would be substantially reduced.

The 16 million members of the government-owned SSS access a range of financial services, such as housing, salary, and stock share loans, through 54 branches across the country. Of these, nine branches serve as fully-functional data centers.

The results with PATROL implemented were immediate. Reduced downtime led to improved customer service and heightened staff productivity. Costs relating to technical support were reduced too as the SSS no longer had to rush support personnel to various branches to correct system errors and restart crashed systems.

PATROL product-specific expertise for monitoring and automating processes, also leveraged the technical skills of the administrative staff and helped reduce training requirements, as well as administrative overheads. Reporting also became more efficient as PATROL kept automatic and regular track of network and database activity. PATROL easily addressed the issue of central monitoring of remote Oracle databases as it automated and centralized the control of critical elements.

Currently, PATROL consoles are running on the organization's SCO Unix, DEC/OSF1 and IBM RS/6000 machines. Its agents are running on SCO Unix, DEC/OSF1, IBM RS/6000, Sun Server and DEC Ultrix machines. All databases and Unix machines in the remote offices are monitored centrally from the head office using PATROL. With proactive systems provided by the product, only two database administrators and two systems administrators are needed at the head office to monitor and control the databases and Unix machines in all nine offices.

The SSS is now planning to establish a back-up and recovery center with an additional license of PATROL. "To be successful in a changing global marketplace, an organization must be flexible and able to address new business opportunities," explains Maralit. "Hence, each SSS data center has its own database to help it respond quickly to the local environment.

"PATROL is event driven and can manage virtually any application providing a pragmatic alternative to centralized corporate databases. As a result, we now have PATROL-based management control from the head office," says Maralit. "We would like to have the same flexibility and support for the back-up and recovery center, which is why we have requested another license."

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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

GOIN' TAPE

Worldwide tape drive storage revenue

1996	$2.5B
1997	$2.9B
1998	$3.1B*

*Projected

Source: International Data Corp., Framingham, Mass.

Storage capacity grows

Quinta Corp., a unit of Seagate Technology, Inc. in Scotts Valley, Calif., last week said it developed a technique using laser beams and tiny lenses to boost hard drive storage capacity. Called Optically Assisted Winchester, it can increase the existing 2G bytes per square inch by 10 times or more, said Alan Shugart, Seagate's chairman and CEO. Company officials said the first products based on the technology will ship within two years.

Data warehouse bundle

NCR Corp. last week announced a package of data warehousing hardware, software and services aimed at Internet service providers that want to analyze online traffic and demographic data. NCR officials in Dayton, Ohio, said they will target the SmartEC Decisions bundle at online merchants later this year after adding links to business applications such as SAP AG's R/3. The package starts at $900,000 and is built around NCR's WorkMark 5100 servers and its data warehouse design methodology and consulting services.

Samsung Alpha: due

Samsung Electronics Co. has gained rights to manufacture its own versions of Digital Equipment Corp.'s Alpha chips. Samsung will gain access to all Alpha microprocessor intellectual property, including patents and future implementations. Digital will manage the architectural process to ensure architectural consistency and continue to develop Alpha designs.

Old PCs put knot in management

▸ *Tools won't help until new PCs are in place*

By April Jacobs

USERS SAY NEW desktop management tools will help them cut costs. But it will probably be at least a year before they make an impact as companies retire older hardware and install new PCs that use the tools.

John Pastore, chief technology officer at Capitol One Financial Corp. in Chicago, said he considers managing distributed PCs "critical in terms of keeping overall [information systems] costs down."

"But because we're cycling new hardware in on a two-year time schedule, and in some cases, three to four years, a lot of our PCs don't have the capacity to be highly managed," he added.

Tools can save time and money, but they don't always work on older hardware and operating systems

At Capitol One, most PC users are running Windows 95, but some still have models based on Intel Corp.'s 486 chip, Pastore said.

As older PCs are exchanged for new ones, more management tools that trim the bank's support costs will be put in place, he said.

For example, desktops with Intel's latest Distributed Management Interface (DMI) 2.0, software embedded in hardware, are now debuting from vendors such as IBM and Compaq Computer Corp.

Systems based on the specification allow a network manager working in a central office to remotely troubleshoot PC hardware and software problems, such as hard drive errors or incompatible versions of desktop applications.

This is a time- and money-saver, users said, because it

PC management, page 60

Rollouts link storage standards

▸ *Help users get more out of SCSI investment*

By Nancy Dillon

BOB JOHNSON is confident that Fibre Channel-based storage networking will be the next storage standard.

What he isn't so sure of is the fate of his legacy SCSI-based servers and disk arrays as he migrates to Fibre Channel over the next two years.

"I have a big investment in SCSI right now, so an entirely new storage interface makes me a little nervous," said Johnson, an engineer at real estate firm Cushman & Wakefield, Inc. From his Seattle office, Johnson supports 200 Western region employees for the New York-based company and helps set national standards for 2,000 users across the country.

Analysts said many users believe they need homogeneous Fibre Channel environments to build storage networks resembling today's LANs.

"But users don't have to give up SCSI to get into storage-area networking now," said Michael Peterson, an analyst at Strategic Research Corp. in Santa Barbara, Calif. "If I were building a completely new storage network today, it would be wise to go Fibre Channel all the way. But there are several new products that help SCSI users get around forklift upgrades," he said.

Fibre Channel, page 60

STORAGE OPTIONS

Building storage networks from legacy SCSI-based systems:

CrossPoint 4400 Fibre Channel-to-SCSI router

Possibilities for CrossPoint users:

1. Connect geographically dispersed SCSI-based devices with Fibre Channel connections (Fibre Channel connections can span 10,000 meters, whereas SCSI connections are limited to 25 meters).
2. Connect up to 60 SCSI devices to a Fibre Channel network with one router (stand-alone SCSI bus limited to 15 devices).
3. Migrate data from SCSI RAID storage to Fibre Channel RAID storage.

Jigsaw 8 SCSI switch

Possibilities for Jigsaw users:

1. Connect dispersed SCSI systems with multiple switches (each extending connection length by 25 meters) or with a 20-km fiber connection.
2. Connect up to 120 SCSI devices on one switch.

CONNECTIVITY

AvantGo gives handheld users intranet access

By Kim Girard

PALMTOP DEVICES are the latest to grab at the intranet.

San Mateo, Calif.-based AvantGo, Inc. has unveiled an application for the PalmPilot handheld computer that lets users grab information off corporate intranets.

The company's $99 Web Client allows 3Com Corp. PalmPilot users to access information on company intranets from the road. Companies can design their own applications for the PalmPilot using standard Hypertext Markup Language.

With more companies relying on intranets, handhelds — which typically cost between $300 and $600 — are becoming a cheaper and increasingly more useful alternative to $3,000-plus notebooks for users with limited business needs

International Data Corp. in Framingham, Mass., reported that as of October 1997, 59% of U.S. corporations had built

AvantGo, page 61

Old PCs stall management

CONTINUED FROM PAGE 59

prevents constant house calls and reduces downtime for end users.

But older hardware and operating systems such as Windows 3.1 don't work with tools such as Microsoft Corp.'s Zero Administration for Windows.

Zero Administration, available for Windows 95 and NT, works with DMI 2.0-compliant hardware.

That gives network managers more PC management capabilities, enabling them to distribute software to many desktops from a central location.

Analysts at Gartner Group, Inc. in Stamford, Conn., studied the issue of PC ownership costs and last year concluded that users of tools such as Zero Administration can trim overall costs by 26% over the life of a PC.

Gartner said companies typically spend about $39,000 in equipment and labor costs to maintain a PC over three years.

Rao Naraparaju, a programmer/analyst at ExaSystems, Inc. in Somerset, N.J., said he is optimistic about the potential time savings from PC management tools.

"Cutting desktop support costs is definitely an important issue for companies right now — particularly large ones," Naraparaju said.

"Tools like Zero Administration and DMI are going to be a big help because support people don't have to go out to desktops to fix everything and users don't have to call the help desk every time they have a problem to work through it," he added. □

"NCD is an overnight success at FedEx."

It's no surprise that Federal Express uses the latest technology to stay one step ahead. NCD delivered desktop solutions for FedEx.

Recently, Federal Express Corporation (FedEx) replaced nearly 3,000 terminals with NCD HMX desktop devices at 15 customer service sites across the U.S.

According to Dave Barnwell, Federal Express Corporate Director of Customer Service Technology Systems, there were three criteria for the new desktops: "First, they had to improve the job design of the Customer Service Reps. CSRs had to like it more, and have their job enriched by having it. NCD met that. Secondly, they had to improve customer service. They are doing that. Finally, it had to pay for itself. It's done that, too."

"Centralized maintenance was also a big issue. When you think about 15 sites and that number of seats..." Now, FedEx CSRs have 17" color monitors and are running mainframe apps, customer service apps, WinCenter (which delivers MS Office apps) and the Internet. "In essence, I have four different computers, all in one desktop device," said Barnwell. "We would make the same decision again. (NCD) turned out to be less expensive and easier to support."

"Not only does NCD offer a very good product, they've enhanced their relationship by working more closely with us to understand our needs, and then come up with solutions. I'm very pleased."

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Fibre Channel

CONTINUED FROM PAGE 59

One of these products is the CrossPoint 4400 Fibre Channel-to-SCSI router from Austin, Texas-based Crossroads Systems, Inc. Another is the Jigsaw 8 SCSI switch from Gigalabs, Inc. in Sunnyvale, Calif.

The CrossPoint 4400 router lets users transmit data from distributed SCSI-based systems over Fibre Channel lines. It has two Fibre Channel ports and can connect with four SCSI buses.

Because the router can take advantage of Fibre Channel connection lengths up to 10 kilometers, users don't have to house their storage peripherals in the same room or building as their servers.

The Jigsaw 8 SCSI switch also lets users expand the 25-meter limitation of SCSI. For example, users can form a chain of switches to regenerate the signal that transmits data between two offices. They also can connect two switches with a fiber line to achieve distances up to 20 kilometers.

It has eight slots and is compatible with interfaces including SCSI, Asynchronous Transfer Mode and the High Performance Parallel Interface.

Gigabit Ethernet and Fibre Channel interfaces will follow.

PLANNING FOR THE WORST

Johnson said he could see the advantage of storage networking with current SCSI systems. "In the Western campuses I deal with, if there is a disaster such as a fire or earthquake, all of my SCSI storage is in one place, and I'm stuck. So it might be useful to use a switch or router for replicating data outside of areas with high rent and high probability for disaster," he said.

Lu Huang, a senior technical manager at the UCLA Medical Center in Los Angeles is using a Fibre Channel-only switch to connect a Unix server to three disk subsystems containing X-ray images.

Aside from higher throughput of Fibre Channel, "the ability to situate storage far from the server has proved the most important advantage of storage networking," Huang said.

The CrossPoint 4400 has a suggested price of $24,995, and the Jigsaw 8 is priced at $8,000 per port. □

AvantGo ties handheld users to intranet

CONTINUED FROM PAGE 59

intranets. That percentage is expected to grow to 77% this year. At the same time, handheld sales have exploded. Dataquest in San Jose, Calif., reported 1.6 million handhelds shipped in 1996, compared with a booming 1.4 million in the first half of last year alone.

Grenley-Stewart Resources, Inc. in Tacoma, Wash., is using AvantGo with the PalmPilot to enable its trucker clients, who bill Grenley-Stewart for fuel costs, to gather daily fuel pricing updates from the company's World Wide Web page as well as maps so they can find the station with the cheapest fuel.

AVANTGO FEATURES:

- Connects users to corporate intranet
- Lowers cost of ownership of mobile [illegible] computer applications
- Improves communication among [illegible] in large [illegible]
- Simplifies access to information without a laptop

Truckers can stick their PalmPilots into a modem cradle at a filling station or hotel to update maps and pricing information. The company plans to use the system to automate collection of driver logs and sales inventory data over the network. Company salespeople are also using PalmPilots to dial in and download daily oil prices.

"It gives our salespeople an edge to have prices readily available so they can show it to a customer," said Mitchell Sheean, the company's manager of information services.

At Philadelphia-based corporate travel management company Rosenbluth International, Inc., business travelers soon will be able to grab information about their destinations on the PalmPilot from the company's Web site. Information will include restaurants and copy center locations, maps, Internet access numbers and airline numbers.

Company marketing manager Edward Barrett said the service is expected to save the company money by cutting down the number of time-consuming questions service representatives handle from corporate travelers.

And for travelers, having information at their fingertips saves time and money. "With the stuff in your Pilot, you avoid having to hook up to a phone jack," Barrett said.

For example, PalmPilot users can set the URL to *www.rosenbluth.com* and use hyperlinks to find information about a Chinese restaurant in New York and a map that directs them there.

AvantGo's Web client increases the PalmPilot's appeal to corporations, according to Greg Blatnik, an analyst at Zona Research, Inc. in Redwood Shores, Calif. "The message is, if you're not about providing Internet-based access, you'll be at a disadvantage," he said. □

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Mobile Computing

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Briefs

Wireless upgrades

Sears, Roebuck and Co. in Hoffman Estates, Ill., has signed a three-year contract extension with wireless data network provider ARDIS in Lincolnshire, Ill. About 7,000 Sears technicians send more than 150 million wireless messages over the ARDIS network annually. Sears is using ARDIS terrestrial with Norsat satellite coverage provided by American Mobile Satellite Corp. in Reston, Va.

Hitachi notebooks

Milpitas, Calif.-based Hitachi Corp. is rolling out the Visionbook Plus 5000 notebook, with longer battery life and boosted graphic performance. The notebook features 166- and 233-MHz Pentium processors with MMX technology; a 12.1-in. high-performance display; a dual battery that provides more than four hours of battery life; a 56K bit/sec. modem; and an interchangeable 20-speed CD-ROM drive, floppy disk drive, Zip drive or LS120. Estimated street prices are $1,699 for the 166-MHz model and $2,299 for the 233-MHz model.

ThinkPad price cuts

IBM cut the prices on some of its ThinkPad notebooks. The ThinkPad 770 notebook is now priced at $5,199, a $2,000 reduction. The ThinkPad 560, ThinkPad 380 and ThinkPad 570 series notebook computers also have been reduced by up to 27%.

Mobile Web browser

STHC Enterprises Ltd. has unveiled an application that lets mobile telephone users browse the World Wide Web on the phone's display screen. The browser, called Hitchhiker, was demonstrated last week at a mobile communications trade show in Cannes, France. It requires about 250K bytes of read-only memory and "minimal" RAM. The product will be sold through mobile phone makers, according to STHC in Bury St. Edmunds, England.

IS: PDA E-mail is still weak

▸ *But users demand portable access devices*

By Barb Cole-Gomolski

PERSONAL DIGITAL assistants (PDA) are hot, and one of the hottest applications for these devices is E-mail.

But IS managers have mixed opinions about whether PDAs will play a significant role in the corporate electronic-mail mix.

On one hand, users love PDAs and other handheld devices, such as two-way pagers, because they are lightweight and easy to use. Some PDAs have built-in paging and work on wireless networks, which lets users stay in touch even when a telephone line isn't available. On the other hand, few information systems managers consider the E-mail features of these devices robust enough to replace the current crop of mobile E-mail clients.

Terry Richards, information technology manager at the National Association of Realtors in Washington, who recently outfitted some of the association's top executives with 3Com Corp. PalmPilots, said the move has helped them work more efficiently.

"When something breaks on [Capitol] Hill, we have to blast out an E-mail or a press release almost immediately to our membership," Richards said. Before getting PalmPilots, receiving input from traveling executives was difficult and could hold up the publication of membership alerts, he said.

Diana Hwang, an analyst at International Data Corp. in Framingham, Mass., said the handheld computer market grew about 50% last year, largely because of the popularity of devices such as PalmPilot. And E-mail now ranks among the top five applications for handheld computers, along with contact management, calendaring and file access. What's more, the hooks between PDAs and corporate E-mail systems are improving, Hwang said.

Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn., said corporations won't initially buy large numbers of what he described as mass access devices — which include pagers, cellular phones and subnotebook computers with E-mail capabilities.

Rather, "employees will force corporations to support the [mass access devices] they have bought," Austin said. "Users want these devices for the same reason people buy Hondas. They work, [you] don't have to worry about them and they get the job done."

PalmPilot user Jerry Winchell, a controller at Progressive Insurance in Mayfield Village, Ohio, said his PDA's E-mail "is fine for just checking Internet mail."

Progressive's corporate E-mail package is Lotus Notes. Third-party software synchronizes Notes with PalmPilot, and there is a version of Lotus Organizer for PalmPilot. But Winchell said his company tends not to run the latest Notes and Organizer upgrades on its corporate desktops. Instead, it runs older versions that aren't supported by the connectivity pack-

PDAs, page 68

JUMPIN' JUPITER

Microsoft CE devices, code-named Jupiter

Weight: 2 pounds

Screen: Color

Cost: About $1,000

Features: 16M bytes of RAM, instant "on" capability, touch screen or trackball and about eight hours of battery life

A cloudy future for CE-based mininotebooks

By Kim Girard

THEY AREN'T HANDHELDS, but they aren't laptops, either. They're mininotebooks that run Microsoft Corp.'s Windows CE operating system and weigh in at about 2 pounds.

Some users and analysts said the lightweight devices, code-named Jupiter and due out in June, will be popular with road warriors who want their electronic mail on a light PC companion. Others said the Jupiter market never will take off in corporate America, partly because of the limited flexibility and capabilities of the Windows CE operating system.

Gary Gannon, director of information systems at Producers Energy Marketing LLC in Hous-

Mininotebooks, page 68

• Market for portable communication devices will grow

Melding of phones, handheld computers will continue this year, study shows

By Stewart Deck

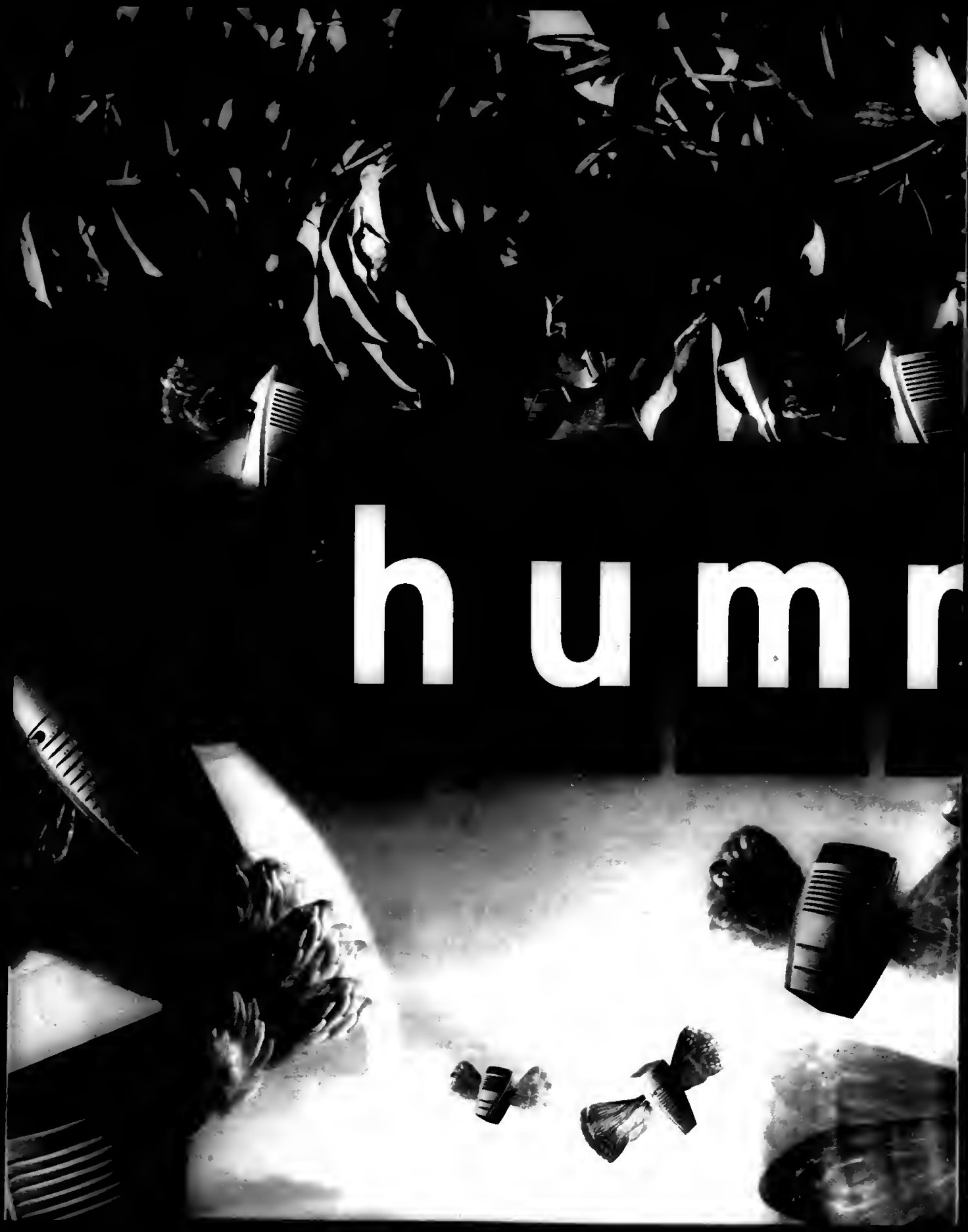
THE FUZZY LINE between telephones that compute and handheld computers that communicate will get fuzzier this year as the markets for both continue to grow, a new study shows.

The report, from International Data Corp. in Framingham, Mass., predicts that unit shipments of handheld computers, personal digital assistants (PDA) and smart phones will increase more than 60% from last year to a total of 8.2 million.

The smart phones, which combine a wireless telephone with some computing functions, fall in-

Phones, handhelds, page 68

Devices that combine a standard analog cell phone with E-mail, fax capabilities and a PDA include Nokia's 9000 Communicator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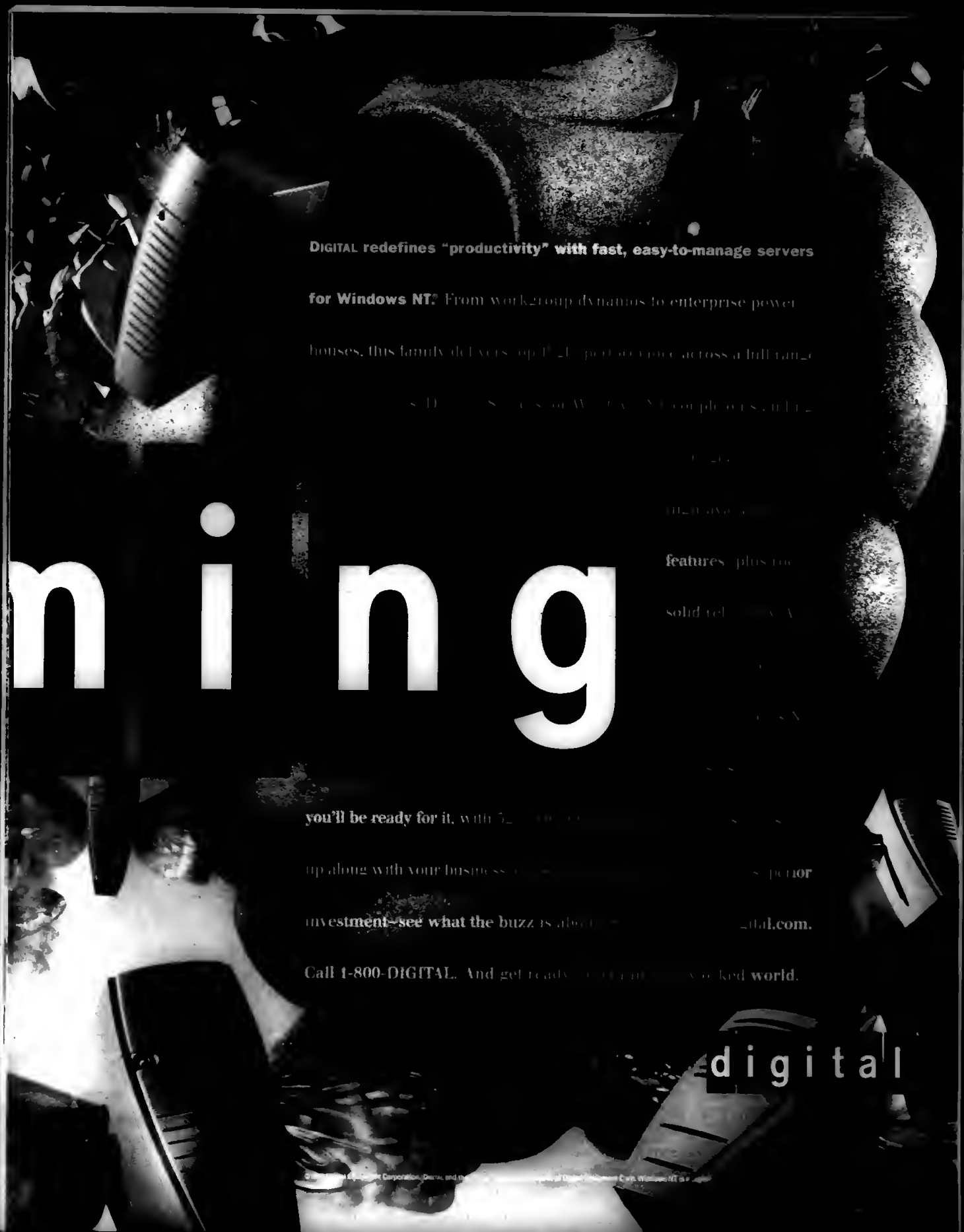
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Snapshot

HOW WIRELESS E-MAIL SERVICES STACK UP

	WyndMail	RadioMail	Zap-It
Company	Wynd Communications Corp.	RadioMail Corp.	DTS Wireless Co.
Nationwide service	Yes	Yes	Yes
Contract required	No	Yes	Yes
Activation fee	$49	$49	$39.95, depending on plan
Minimum service cost per month	$29.95	$19.95	$9.95
Platforms supported	Windows 3.1 and 95, Windows CE, Macintosh, HP Palmtops and Apple's MessagePad	Windows 3.1 and 95, Windows CE 2.0 and HP Palmtops	Windows 3.1 and 95, Windows CE, DOS 5.0 and HP 100/200LX Palmtops
Modem cost	$499	$499	$304.90 with annual plan

All support E-mail, faxing, paging, speech to text and dial-up message retrieval.

Source: Mobile Insights, Inc., Mountain View, Calif.

Mininotebooks have cloudy future

CONTINUED FROM PAGE 65

ton, said the company still is seeking an answer for mobile end users in its marketing department.

"Most marketing guys don't like the laptops because they're too bulky," he said. But Gannon, who has some Compaq Computer Corp. Windows CE handhelds, said the operating system still has some rough edges.

"It's not as tried and proven as a laptop. You bump into things that don't work. Integration with Outlook [personal information manager] and the desktop is a problem," he said.

"CE is just a pain in the neck," said Howard Arkin, chief information officer at Gould Paper Corp., a New York paper manufacturer.

Arkin said he wants salespeople to be able to use a browser on a lightweight Windows CE device to access Gould's intranet while on the road. "We played with [CE]," he said. "It's not a full-featured operating system, and that's a problem."

Sales of the Windows CE handheld devices have been sluggish but are expected to pick up because of the popularity of CE 2.0. According to Dataquest in San Jose, Calif., 500,000 Windows CE handheld devices were sold worldwide last year.

"Integration with Outlook and the desktop is a problem."
– Gary Gannon, Producers Energy Marketing

The Jupiter machines, which are expected to run Windows CE 3.0, are siblings to Microsoft's smaller Palm PC devices. Those devices, which run Windows CE 2.0 and are made by electronics vendors including Casio, Inc. in Dover, N.J., and Philips Electronics NV in the Netherlands, will debut this summer. They were designed to compete with the PalmPilot from 3Com Corp. in Santa Clara, Calif.

At a price analysts estimate will be around $1,000, the larger Jupiter CE devices will battle for users with Toshiba America Information Systems, Inc.'s Libretto 50CT and Mitsubishi Corp.'s Amity CN. These portable computers run Windows 95 and cost about $1,800, but prices are expected to dip this year. Microsoft officials wouldn't discuss Jupiter.

Analysts expect most Windows CE vendors to offer Jupiter devices, but none has yet announced plans.

Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said Jupiter mininotebooks will find an important market niche as a "no-brainer" alternative for mobile users who don't need a full-function notebook, he said.

But Ken Dulaney, an analyst at Gartner Group, Inc. in Stamford, Conn., said few corporate employees will want them because they do little more than process E-mail and are incompatible with Windows 95 desktop systems. "You can buy a Libretto for $1,200 today and get more performance" than is expected from Jupiter devices, Dulaney said. "If corporate businesspeople think that all they're going to do [with a notebook] is E-mail, they're mistaken."

Analysts said Jupiter notebooks will have an improved World Wide Web browser, better Universal Serial Bus support for peripherals, a color screen and versions of Microsoft Word and Excel. But they still will have an awkwardly small keyboard and no active-matrix screen and cost more to support because they use a different operating system that takes more time to synchronize with the desktop, Dulaney said. □

IS is cool to PDAs

CONTINUED FROM PAGE 65

age for hooking Notes and Organizer to PalmPilot, he said.

Still, with PalmPilot's battery life of "weeks, not hours," probably a third of the PalmPilot users at the company would use it as a laptop replacement if they could be guaranteed that the PDA version of Notes was compatible with their desktops, he said.

With those users, the main concern is staying in touch, and the PalmPilot handles that task as well as a laptop computer, Winchell said.

Sandra Swee, LAN operator at South Florida Manufacturing Technology Center, an engineering company in Fort Lauderdale, Fla., said PDAs represent a potential cost savings because they could take the place of several mobile accessories.

"Right now, each one of our field representatives has a mobile phone, laptop and pager," she said. "If we could get rid of some of those devices in exchange for PDAs, that would be economical."

Some users said the design and size of PDAs and two-way pagers will limit how widely they are used for E-mail.

A PDA is "for grabbing some E-mail to work on while you're stuck in the back of a taxi," said Tom Tracey, technology officer at PNC Bank Corp. in Pittsburgh. Tracey uses the PalmPilot in conjunction with his corporate Notes account and Microsoft Corp. Outlook Internet mail client.

"If you need to tell someone point by point what you don't like about their proposal, it's not for that," he said. □

Phones, handhelds are melding

CONTINUED FROM PAGE 65

to three general categories: PDA/cellular phones, Cellular Digital Packet Data (CDPD) phones and phones that run on the Global System for Mobilization (GSM) cellular service.

PDA/phone combos offer a standard analog cellular phone with electronic mail, fax capabilities and a PDA. But the units — including the well-known Nokia Corp. 9000 Communicator and its cousins from Samsung Corp. and Qualcomm, Inc. — try to be too many things to too many people, said Mike McGuire, an analyst at Dataquest in San Jose, Calif.

"The risk with these types of smart phones is the kitchen-sink syndrome," he said.

"I don't think that these . . . smart phones are going to ultimately be attractive to many people," agreed Andrew Seybold, an industry analyst and editor of "Andrew Seybold's Outlook" newsletter in Boulder Creek, Calif.

Seybold said the problem is that most people chiefly communicate over the phone and need to be connected to data only occasionally. But those smart phones were designed for users who want to connect to data more than use the phone, he said. More users want a small, quality phone with some data access, not a bigger device that won't fit into a pocket, he added.

READ-ONLY DEVICES

CDPD phones also give users E-mail and Internet access, but they essentially are read-only devices that combine the characteristics of a regular cell phone with digital data capabilities. The phones transfer digital data packets to users in between cellular voice conversations but can't store data themselves. The trouble with the devices is that CDPD service can be spotty outside of metropolitan areas.

Perhaps the true mobile users' Holy Grail can be found by looking to Europe and Asia, where the fully digital GSM cellular protocol is the standard wireless cellular technology. With one standard prevailing, roaming over widespread areas and interoperability among competing services aren't the problems they are in the U.S.

GSM service in the U.S. — provided in pockets by Sprint Corp. in the Washington area, BellSouth Corp. in the Southeast and Pacific Bell Corp. in California — has been slow to expand.

Providers aren't too interested yet in selling the wireless data services that would bring smart phones to life, McGuire said, because they are too busy selling the more lucrative GSM voice service.

"GSM providers will turn their attention to data traffic only when they need to realize the incremental money it can bring," McGuire said. □

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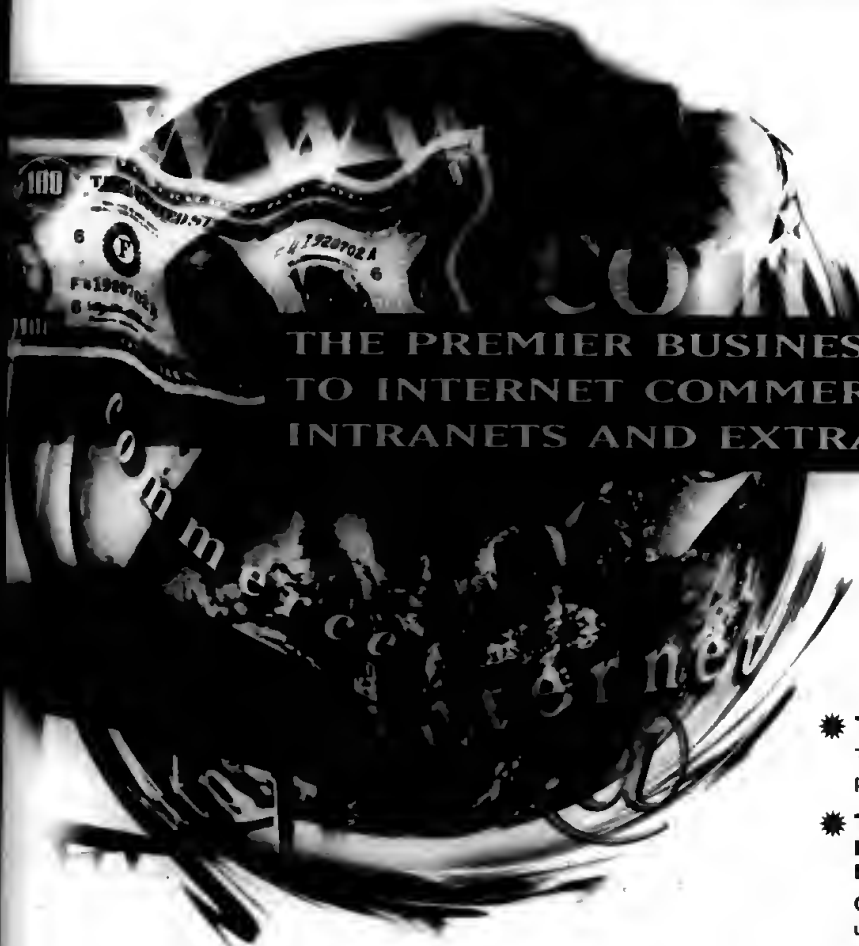

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Million of turnover Estimates of CIO turnover vary, as do the reasons behind it. Page 73

Managing

BY ROCHELLE GARNER

He gets it! Gregory Rotvik knows what technologies provide the greatest business value for the law firm where the systems administrator works: "We've found that E-mail over the Internet saves overhead and time, allowing our attorneys to spend more time on cases"

OR CLUED IN?

We asked IS professionals what technologies provide the greatest value for their businesses. What we heard left us wondering how many understand "business value"

SOME PEOPLE JUST DON'T GET IT.

We asked hands-on information systems professionals to name the technologies with the greatest business value.

They say firewalls! That's right, firewalls, even after we defined "business value" as "contributing to your business' overall financial performance, market position or competitive advantage."

So OK, we admit that's a lot of words for "make money." But making money is precisely the point. And there's no way that firewalls — or encryption, Cobol and especially word processing, as some people answered — open a company's coffers to let the profits pour in. Keep the doors open? Sure. Secure your assets? No doubt.

Frankly, our idea was to poll the IS pros in the trenches for their personal take on their companies' IT spending budgets. You know, find out which technologies and services they see as providing the most, and least, business value.

And yes, we found some real winners and losers — with respondents offering only tepid support for systems integration, for example, and very low support for external facilities management. The highest-rated technologies? Electronic-mail applications, firewall security tools and application development tools. Help desk applications rated high, too.

Clueless? page 72

CONTINUED FROM PAGE 71

That's not to say that everyone who answered this survey seemed clueless. A refreshing number of people (just not refreshing enough) actually showed real understanding of the broader context in which information technology must operate: the context of business.

Consider this statement from a systems analyst who asked not to be named: "I would give sales force automation tools the highest rating. We're a hotel management company. Each hotel has its own sales force that is overseen by the corporate office. That tool tells what the sales force is doing and lets corporate steer it toward marketing ideas, which means more guests." (Note to all hotel chains: Find out who in your IS organizations think this way, and give them all raises!)

In fact, probe all the answers given and you begin to see an interesting dichotomy between those who "get it" and those who don't. Those who don't, for example, are marked by insularity. Technologies that are good are those they use or are, at least, comfortably familiar with. So, just what is important to them?

"Web development tools, application development tools and the help desk," says one systems analyst. "These tools are indispensable for development."

"E-mail and firewalls," says a computer systems administrator, "because everyone uses them on a daily basis."

"WordPerfect," avows a network administrator. "This is a law firm, so word processing is very important to us." And from a systems analyst: "Web development tools, because they are important to the Web and what it stands for."

Fortunately for executives, the IT population has a flip side that, apparently, does understand the IT/value connection. Those are the pros who display a healthy interest in corporate life outside their cubicles. They care about their companies' well-being and marketplaces and ways to capture new business. And they tend to approve of technologies that, when applied with vision and acumen, can improve the bottom line.

THE SURVEY

IS professionals were asked to rate the following technologies and service companies on a scale of 1 (no business value) to 10 (extremely high business value).

EXTERNAL IT SERVICE COMPANIES

	Mean
External software support companies	6.15
External IT training companies	5.97
External systems integration companies	5.15
External facilities management companies	3.64

TECHNOLOGIES OR APPLICATIONS

	Mean
E-mail applications	7.98
Firewall security tools	7.39
Application development tools	7.05
Internet/intranet internal communications applications	6.75
Groupware applications	6.62
Web development tools	6.34
Help-desk applications	6.04
Data warehousing applications	5.92
Encryption security tools	5.88
Sales force automation applications	5.70
Project management applications	5.63
Electronic-commerce applications	5.49
Internet marketing communication applications	5.32

CLUED IN

Talk to Neil Jabri and you quickly realize that he recognizes that technology ultimately must serve the twin goals of productivity and profit.

His company, Tatex Thermographers, Inc. in Waco, Texas, apparently realized it, too. It recently promoted Jabri from network administrator to business technology coordinator.

Jabri, one of only two IS professionals in Tatex's Waco office, has helped the printer of business cards, stationery and social invitations lure additional customers and reduce production time. (Tatex claims to have more than 50% of the social invitations market nationwide.)

The technology being used: Internet marketing communication applications. "Instead of manually filling out a form and then faxing it to us, our corporate clients place the orders electronically," Jabri says.

The result: Orders are now complete and accurate.

What's more, Jabri says, the company has attracted new dealers of social invitations, specifically because of that online application.

Jabri's next project? Capturing that electronic information to automatically generate a printing plate, bypassing the need for typesetting.

"That not only will improve accuracy even more, it will reduce cycle time," he says. "We had to make time to carefully think about our Web site, diagram it on paper and decide from the outset whether it would be used for marketing, to generate sales or for advertising. After a lot of discussions with the corporate offices, we made our decisions."

EYE ON THE FUTURE

Sigma-Aldrich Corp. in St. Louis makes more than 40,000 chemical and chemical-test products used in research and clinical laboratories. Customers can order many of those products over the World Wide Web. Has it drawn many customers? "We think we've added some, but it's not easy to measure," says Brian Lawrence, an application development supervisor at the company. "Still, the system does make it more convenient for customers who, themselves, are trying to be more competitive. Plus, we want to stay ahead of our competition, which is why we want to be there when more customers are ready."

That vision of what lies ahead prompted Lawrence to give high value marks to Web development tools and electronic-commerce applications.

> Even though sales force automation applications scored a tepid 5.70 in the survey, spending in that area — based on a sampling from the Computerworld Buyers Database — increased 64.4% from 1995 to 1997.

Now think about that. Although Sigma's Web efforts aren't causing customers to come calling in droves, they potentially could — and Lawrence knows it. That's what sets him apart from the systems analyst who gave the same technology his lowest marks, saying, "We have it, but who wants to surf the Web for our products, except our competitors?" He's missing the point.

Lawrence, though, is right on target. Which explains why he's also working diligently to add vendors, suppliers and customer support to Sigma's electronic system. "We look at the Internet as more than just an information source," he says. "That's why we're looking at adding things like technical support so that customers can log in and get their answers right away. Many of our customers are in hospitals, which tend to be three to four years behind in information technology. Even though they can't use it now, having Internet ordering does put you ahead of your competition in their minds."

NOTHING FANCY

Of course, technologies don't have to be the latest or the snazziest to provide real business value. It's all in how you apply them. "We are a law firm, and we sell services like Joe Blow's Car Wash sells services, only in our case those services take the form of paper documentation," says Gregory Rotvik, systems administrator at Sussman Shank LLP in Portland, Ore. No, Rotvik doesn't rank word processing as a business value. What is a business value, however, is the firm's ability to get that documentation to clients and back again as fast as possible. And if the process costs less than a courier or fax, so much the better.

"We've found that E-mail over the Internet saves overhead and time, allowing our attorneys to spend more time on cases," Rotvik says. "That benefits our and our clients' bottom line." It has also helped set the firm apart from its competition, Rotvik says. "In law, it's not so much whether you did it right or wrong but how well you played the game. And if you can differentiate yourself through technology, then you are ahead."

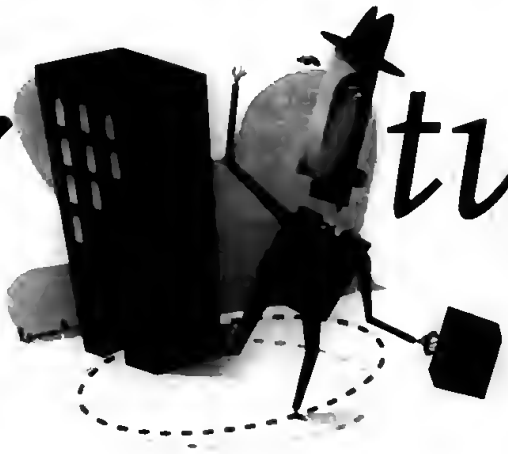
Shawn McMillian, at Leviton Telcom in Bothell, Wash., isn't drawn to fancy-schmancy technology, either. Instead, he sees the biggest value in good old application development tools, E-mail and sales force automation applications. "I try to keep up with what's going on in the real world, not to keep up on the snazziest devices so much as how we can help users do their jobs better," says the programmer/analyst at the Leviton Manufacturing Co. division that makes connector jacks, plugs and cords for computer desktops.

For McMillian, doing the job better means doing the job smarter. That's why he and the other two IS people in his department have created applications that let sales, marketing and purchasing folks slice and dice real-time data any way they need to fill in otherwise invisible sales gaps. E-mail connecting PCs in Leviton's manufacturing warehouse sends real-time data on shipments to internal customers. "Everything we do with technology carries the underlying question of what can this do to further the business," McMillian says.

Bingo. That's the question every IS professional — regardless of responsibility — needs to ask. Because when they do, they come up with answers that promote the corporate good. Perhaps more than anything else, this survey reveals the crying need of IT executives to apprise their staff of what is, and is not, of real benefit to the business. □

Garner is a freelance writer in San Carlos, Calif.

AS THE *door turns*



CHRIS LORSCH

NO ONE KNOWS FOR SURE WHAT CIO TURNOVER IS. BUT THERE APPEARS TO BE A LOT OF MOVEMENT OUT THERE.

BY STEVE ALEXANDER

HOW HIGH IS TURNOVER among chief information officers?

Maybe more important, why are they coming and going?

Turnover estimates from recruiters and analysts range from 15% to 40%. But just as varied are the reasons cited as to why CIOs leave.

It doesn't mean every CIO is on the hot seat.

Bruce Stewart, vice president and research director for management and technology at Gartner Group, Inc. in Toronto, says the nature of turnover has changed, with more CIOs controlling their own destinies. "For example, if a CIO is a fix-it artist, he or she may want to go on to another situation," he says. Also, "in the past, when the CIO was replaced, he or she left the firm as well. Today the CIO probably is being moved to another position in the company."

Toby Younis, vice president of Meta Group, Inc.'s Executive Council in Reston, Va., says turnover is largely due to the CIO being seen as an important part of the management team, "and companies are trying to fill that position with the right person." It's not that CIOs or companies are disgruntled; both sides keep looking for an even better fit.

"There's probably a large number of very quick turnovers, and there's another group that has had very few CIOs," says Jim Spitze, a former CIO and now a consultant in Orinda, Calif. "I think the successful CIOs are getting much more involved on the business side."

But others disagree, saying CIO failures are lurking behind the turnover statistics.

Doug Downing, a partner at Deloitte & Touche Consulting Group in Toronto, says that turnover is rising and that most CIOs are fired. He cites, as key reasons, higher-than-expected year 2000 costs and the trouble CIOs are having in justifying the benefits of replacing legacy systems with companywide systems. Others who aren't fired leave because they're simply tired of fighting for enough resources, he adds.

Although he has no data to back it up, Downing speculates that the higher turnover in some industries, such as telecommunications and financial services, is driving up the turnover rates some analysts cite.

Beverly Lieberman, president of recruiting firm Halbrecht Lieberman Associates in Stamford, Conn., says that after three to five years, CIOs in Fortune 500 companies "generally are being asked to leave, usually because the communication and the expectations that were established between IT groups and business groups have eroded. Communication between the two is often viewed as far from optimum.

"The final thing that kills the CIO is the unsuccessful delivery on projects that were discussed and agreed upon," Lieberman says.

THE RANGE

Analysts vary on their turnover estimates.

Downing says he expects that turnover for the second half of last year will be a little higher than his firm's earlier estimate of 17.7% in 1996 and the first half of last year.

In a *Computerworld* column [Nov. 10, 1997], Paul A. Strassmann came up with 40%, based on "nose count." He says he looked at the names that appeared on the 1996 and 1997 mailing lists of the top 300 U.S. public corporations and compared CIOs' names in each year: In 1997, 40% of the names were new.

But Dean Wolf a principal in IT improvement services at Ernst & Young's Center for Technology Enablement, estimates turnover at 20%. Reports of 40% "just strike me as unrealistic when you consider how long it takes to find a CIO, usually about four months. If the 40% turnover figure were true, nobody would be leading IT in this country."

Stewart thinks CIO turnover, including those who leave their jobs but not their companies, is about 30%, close to what it was a year ago. "There's a lot of change out there keeping incumbency at a 30% change rate. But it's more that businesses are changing what they want from IT than that CIOs are getting fired."

Younis says turnover is about 15%, based on experience with an executive group to which he often speaks. "It is my sense that turnover is slightly lower than it was a year ago," he says.

Bill Grady, director of Romac Executive Solutions, a Boston recruiting firm, says turnover is closer to 20%. Grady says the number of people taking CIO jobs this year might be higher, but some of that is linked to the fact that the CIO title is new at some companies.

A TIME OF OPPORTUNITY?

Jim Kinney, CIO at Kraft Foods, Inc. in Northfield, Ill., and immediate past-president of the Society for Information Management, says he sees a lot of movement among his peers. "I've noticed that a number of people are choosing to retire or move on to something else. And my conversations with recruiters suggest they are very busy," Kinney says.

So whatever the turnover rate, there's plenty of opportunity. Kathy Brittain White, CIO at Allegiance Health Care Corp. in Chicago, says more of her CIO friends have taken advantage of job opportunities. "There is probably never a time in American business that there are more openings for good CIOs," she says. □

Alexander is a freelance writer in Edina, Minn.

TURNOVER ESTIMATES

Some estimates of annual CIO turnover:

SOURCE	PERCENTAGE
Toby Younis, Meta Group	15%
Doug Downing, Deloitte & Touche	17.7%+
Bill Grady, Romac Executive Solutions	20%
Dean Wolf, Ernst & Young	30%
Bruce Stewart, Gartner Group	30%
Paul A. Strassmann, CW columnist, former CIO	40%

JIM CHAMPY

BUILDING STRATEGY STARTS WITH A BLUEPRINT

Strategy, someone once said, "is a plan to confuse and defeat your enemy." Note the word "plan." Without a plan, confusion itself becomes the enemy. Today, with all-too-little identifiable strategy emanating from executive suites, IT managers may be forced to create their own version of business strategy to drive IT decisions.

They'll need plenty of luck and a clear idea of what they're looking for. "Strategy" is a pretty fuzzy word. The definition above may have been fine for Gen. Patton, but in IT parlance, strategy can mean everything from a budget to the choice of a technology platform to the future of the business itself.

Crafting a strategy can be a dreary chore. I spent months working with a company that performed an annual ritual of determining which department got what amount of development resources — bucks, bodies and boxes. That was tedious, required endless meetings, and yes, was called the strategy.

Strategic thinking can be as intellectually daunting as it is exciting, even if you're a management maven. Libraries have been written about strategy. Among serious thinkers, Michael Porter's exhaustive research introduced the importance of competition within an industry. Later, Gary Hamel and C. K. Prahalad argued that a company's strategy should be based on its "core competencies," or what it does really well. Today, author Tom Peters proposes a strategy in which companies form, disband and reform, much like movie production companies, around fast-appearing business opportunities.

DIRECTION, PLEASE?

But all this thinking shouldn't obscure the fundamental, real-world task of a strategic plan: figuring out where to go.

My first introduction to strategy was from my mentor, Peter Drucker. In Drucker, strategy involved "determining where you are today, determining where you want to go and figuring out how to get there."

His definition remains valid decades after he wrote it, with one respectful alteration due to increasingly rapid change. I would skip "where you are" and begin with "determining where you want to go." Ideally, I would do that first for the business and then for IT. It is the most important and difficult part of your intellectual work. It defines the future from countless murky possibilities.

What makes this tricky, of course, is that markets are shifting, industries are being redefined and technology is changing the very essence of what your business is and can be. Chaos can be quantified, though, by beginning with this question: "What does our company aspire to be operationally?"

Then break it down. What kind of customer experience do we want to create? How will we enable product development? What will be the nature of our product or services, given the possibilities in new technologies? How will we manufacture or deliver our product or service? How will we carry out procurement? Then define other key operational objectives such as growth, profitability and time to market.

TAKING THE INITIATIVE

Sadly, many IT executives work at companies where such questions aren't even posed by line executives, much less answered. But by creating and presenting your own plan you will, minimally, create a point of departure and maybe even define all that follows. Indeed, I've often found that doing an IT strategy forces a company to make a number of business decisions it hadn't even considered. You'll simply have to engage line executives to force answers to the next stage of strategy. What does the future state of the company require of IT?

It's essential to start here with a clean sheet of paper. Forget what's in your shop and draw a picture of the ideal IT infrastructure. List everything needed from technologies to applications to skills to the kind of human behaviors required to apply the next "Druckerism." Figure out how to get there.

It's at this point where many IT strategies go wrong, either because managers underestimate what it's really going to take to change their organization or because IT and line managers want to maintain the status quo out of caution, ambition or uncertainty.

Yet, the "how-to" stage is exactly where the pragmatism of the engineering mind is most important. Grounded in realism, computer and software engineers, nevertheless, can be amazingly visionary on how to stretch technology to reach a goal — and then beyond. Antilock brakes, for example, grew out of one typically rational IT manager's irritation that there was a lot of computing capacity left over after designing the microchips to monitor modern automobile engines.

More than three centuries ago, Japanese philosopher Miyamoto Musashi advised: "In strategy, it is important to see distant things as if they were close and to take a distanced view of close things." Not exactly an empirical method, but the world relies on people like you to figure out its "implementation."□

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

ESOURCES: IS MANAGER'S BOOKSHELF

The Second Industrial Revolution: Reinventing Your Business on the Web

By John J. Donovan
Prentice Hall, Inc., Upper Saddle River, N.J. 210 pages, $19.95 (paperback)

This 200-plus-page outline for enabling your business for the World Wide Web is pitched as a survival guide for today's savvy CEO. Mostly it's an unevenly edited collection of rah-rah statements about either getting on the Web gravy train or getting left behind.

As a call to prepare your business technologically, it's moderately successful. As a handbook for implementing change, it's less than revolutionary.

The book contains too many typographical errors and pithy USA Today style snippets of information and not enough definitive advice about how to use your Web site to provide business value to your customers and reinvent your business.

The best part is Chapter 7, a good general overview of the players that currently provide Internet and Web services and technologies.

Author and professor John J. Donovan then offers some helpful real world examples of Internet success stories.

He also reminds the reader that even successful companies will ultimately fail six months down the road if they don't adapt to the changing net landscape.

But it isn't until Chapter 7 that Donovan offers a more detailed vision of that landscape with paragraph summaries of the players and technologies in the market.

Chapter 9 finally acknowledges that changes will be necessary to reinvent your business for the Web, but the general advice offered here — you need to have vision, for example — seems like it's too little, too late.

Roberta Tusaro

JIM CHAMPY

BUILDING STRATEGY STARTS WITH A BLUEPRINT

...gy, someone once said, "is a plan to confuse and defeat ...ur enemy." Note the word "plan." Without a plan, confusion itself becomes the enemy. Today, with all-too-little identifiable strategy emanating from executive suites, IT man...rs may be forced to create their own version of business ...gy to drive IT decisions.

...need plenty of luck and a clear ...at they're looking for. "Strate... ...etty fuzzy word. The definition ...y have been fine for Gen. Pat... in IT parlance, strategy can ... everything from a budget to the ...ce of a technology platform to the future of the business itself.

Crafting a strategy can be a dreary chore. I spent months working with a company that performed an annual ritual of determining which department got what amount of development resources — bucks, bodies and boxes. That was tedious, required endless meetings, and yes, was called "the strategy."

Strategic thinking can be as intellectually daunting as it is exciting, even if you're a management maven. Libraries have been written about strategy. Among serious thinkers, Michael Porter's exhaustive research introduced the importance of competition within an industry. Later, Gary Hamel and C. K. Prahalad argued that a company's strategy should be based on its "core competencies," or what it does really well. Today, author Tom Peters proposes a strategy in which companies form, disband and reform, much like movie production companies, around fast-appearing business opportunities.

DIRECTION, PLEASE?

But all this thinking shouldn't obscure the fundamental, real-world task of a strategic plan: figuring out where to go.

My first introduction to strategy was from my mentor, Peter Drucker. To Drucker, strategy involved "determining where you are today, determining where you want to go and figuring out how to get there."

His definition remains valid decades after he wrote it, with one respectful alteration due to increasingly rapid change: I would skip "where you are" and begin with "determining where you want to go." Ideally, I would do that first for the business and then for IT. It is the most important and difficult part of your intellectual work. It defines the future from countless murky possibilities.

What makes this tricky, of course, is that markets are shifting, industries are being redefined and technology is changing the very essence of what your business is and can be. Chaos can be quantified, though, by beginning with this question: "What does our company aspire to be operationally?"

Then break it down. What kind of customer experience do we want to create? How will we enable product development? What will be the nature of our product or services, given the possibilities in new technologies? How will we manufacture or deliver our product or service? How will we carry out procurement? Then define other key operational objectives such as growth, profitability and time to market.

TAKING THE INITIATIVE

Sadly, many IT executives work at companies where such questions aren't even posed by line executives, much less answered. But by creating and presenting your own plan you will, minimally, create a point of departure and maybe even define all that follows. Indeed, I've often found that doing an IT strategy forces a company to make a number of business decisions it hadn't even considered. You'll simply have to engage line executives to force answers to the next stage of strategy. What does the future state of the company require of IT?

It's essential to start here with a clean sheet of paper. Forget what's in your shop and draw a picture of the ideal IT infrastructure. List everything needed, from technologies to applications to skills to the kind of human behaviors required to apply the next "Druckerism": Figure out how to get there.

It's at this point where many IT strategies go wrong, either because managers underestimate what it's really going to take to change their organization or because IT and line managers want to maintain the status quo out of caution, ambition or uncertainty.

Yet, the "how-to" stage is exactly where the pragmatism of the engineering mind is most important. Grounded in realism, computer and software engineers, nevertheless, can be amazingly visionary on how to stretch technology to reach a goal — and then beyond. Antilock brakes, for example, grew out of one typically rational IT manager's irritation that there was a lot of computing capacity left over after designing the microchips to monitor modern automobile engines.

More than three centuries ago, Japanese philosopher Miyamoto Musashi advised: "In strategy, it is important to see distant things as if they were close and to take a distanced view of close things." Not exactly an empirical roethod, but the world relies on people like you to figure out its "implementation." □

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

RESOURCES: IS MANAGER'S BOOKSHELF

...Industrial Revolution: ...Your Business on the Web

By John J. Donovan
Prentice-Hall, Inc., Upper Saddle River, N.J.; 216 pages; $19.95 (paperback)

This 200-plus-page outline for enabling your business for the World Wide Web is pitched as a survival guide for today's savvy CEO.

Mostly it's an unevenly edited collection of rah-rah statements about either getting on the Web gravy train or getting left behind.

As a call to prepare your business technologically, it's moderately successful. As a handbook for implementing change, it's less than revolutionary.

The book contains too many typographical errors and pithy *USA Today*-style snippets of information and not enough definitive advice about how to use your Web site to provide business value to your customers and reinvent your business.

The best part is Chapter 7, a good general overview of the players that currently provide Internet and Web services and technologies.

Author and professor John J. Donovan then offers some helpful real-world examples of Internet success stories.

He also reminds the reader that even successful companies will ultimately fail six months down the road if they don't adapt to the changing 'net landscape.

But it isn't until Chapter 7 that Donovan offers a more detailed vision of that landscape, with paragraph summaries of the players and technologies in the market.

Chapter 9 finally acknowledges that changes will be necessary to reinvent your business for the Web, but the general advice offered here — you need to have vision, for example — seems like it's too little, too late.

— *Roberta Fusaro*

Review Center

Knowledge management

LEARNING HOW TO SHARE

By Gary H. Anthes

4 companies show different ways to make information more valuable and accessible

LOGAN STARR

KNOWLEDGE MANAGEMENT tries to resolve a troublesome paradox: Information is becoming ever more important in our economy, and most companies say knowledge can confer competitive advantage. But corporations are already flooded with information, and most of us have more of it than we can handle.

W. L. Gore, Shell Oil, Cerner Corp. and Ford Motor Co. all approach that dilemma in different ways, but each tries to increase the value of information by making it more timely and better targeted.

As with so many hot information systems terms, there's no precise definition of "knowledge management." Nevertheless, for the companies profiled here, knowledge management has the following common characteristics:

- Cost savings generally aren't the primary objective. Better and faster decision-making are.
- Quantifying benefits is difficult, but knowledge management is seen as being clearly worth the investment.
- Knowledge management can give employees a clear and consistent view of elements important to the company and enable them to present those views clearly and consistently to internal and external customers.
- The hard part isn't the technology; it's overcoming cultural barriers, especially the mind-set that holding information is more valuable than sharing it.

Learning how to share, page 76

LEARNING HOW TO SHARE

CONTINUED FROM PAGE 75

Knowledge management applications frequently are built on relatively simple technologies — intranets, electronic mail, groupware, databases and search engines — but the companies that report the best results are those that have stitched technologies together seamlessly. And perhaps most important, they have worked hard to nurture a culture that encourages knowledge sharing, a practice that doesn't come naturally to most people.

"We are solving customer problems faster, and that translates directly into higher sales

Dave Clarke, CIO, W. L. Gore and Associates

W. L. GORE AND ASSOCIATES, NEWARK, DEL.

The success of this maker of Gore-Tex and other high-technology materials depends on its being able to finely target products to customers — to tailor a given material to a single customer's needs, if necessary. That requires extremely tight links among marketing, product development and production employees.

The solution: a knowledge management system based on Lotus Notes, Notes databases of product and customer application data and an intranet. "We have done a good job of connecting a worldwide field sales force with our product development teams," says Chief Information Officer David Clarke. "We are solving customer problems faster, and that translates directly into higher sales."

Clarke says that in W. L. Gore's aerospace business segment, "a field engineer may be taking notes on a laptop while with a customer, and that shows up in our database within hours of flying the field trial." Previously, the test results of a new material might have been put in a paper report and circulated among developers days or weeks later.

The Notes/intranet application has been operational for about a year and is now in use by 600 employees in 30 teams. Ken Robell, product manager for a W. L. Gore sealant used in aircraft, says success in his business depends on being able to get into — and out of — markets very quickly.

Robell's team and its customers are scattered around the world, and he says the system has greatly speeded communications. "Before, we used E-mail, voice mail, faxes and filing cabinet shenanigans," he says. "Our tools were Industrial Age, not Information Age."

To Clarke, knowledge management is first and foremost an exercise in communication. In fact, six months ago the company's IS organization began calling itself the communication and collaboration team. "It's a subtle but important change," Clarke says. "For example, we don't think of an enterprise planning system as this big transaction engine attached to a database. We think of it, literally, as a communications system."

In fact, W. L. Gore is building just such a system for production planning that will use a commercial enterprise resource planning package, Notes, an intranet and videoconferencing. It will bring together complex inventory, product, customer and manufacturing data from multiple sites and present it as a "shared model" for use by production planning teams.

"The key is for [team members] to develop a shared space to work in," Clarke says. "Instead of each of them trying to make their own decisions based on reams of reports or screen layouts, they will have the same picture in front of them — a simple picture of what production capacity looks like."

SHELL OIL CO., HOUSTON

While W. L. Gore sees knowledge management in terms of communications and collaboration, Shell views it as a knowledge multiplier. The "best practice" of a single person has the potential for tremendous leverage in a company with 21,000 employees, says Marc Davidson, associate director of the Shell Learning Center.

The center employs 10 subject matter specialists who scour Shell sources — and external sources including universities, consultants, other companies and the literature — for leading-edge practices and ideas. Its Knowledge Management System (KMS) repository contains 1,000 documents and 50 best practices, Davidson says. For example, Shell has included in its repository a model developed by a university professor that helps an organization meets its business goals. The model has already been adopted by all four of Shell's major operating units, Davidson says.

The custom system was developed by Shell and a systems integrator and went online in September. It holds knowledge in three general areas: business models, leadership, and engagement, or human interactions. Other groups at Shell, such as geologists, have similar knowledge management systems, Davidson says.

Shell calls the knowledge repository — a SQL database — the "convergent" part of the KMS.

The other major component, the "divergent" part, is a Lotus Domino groupware application for carrying out dialogues among employees via the company intranet. For example, the author of a best practice in the repository might talk with colleagues about his experiences with it.

In 1991, Shell reported the worst financial results in its history, and that became a wake-up call for the need to fundamentally change the way the oil giant did business, Davidson says.

"It became obvious that focusing on just the technical aspects of the business was not enough," he says. The Learning Center and the KMS are intended to "get every employee to maximize his or her contribution," he says.

So far, the KMS can be accessed by 15,000 employees, but eventually it will be available to all.

One user of the KMS is Sandi Fitch, a senior executive at Shell Services International. Fitch says the KMS is helping the company undergo a "systemic transformation" to excellence mandated by a new CEO in the early 1990s. It's also helping Fitch, a member of a corporate leadership group, mentor technical subordinates in the ways of business leadership.

"I can go into [the KMS], and we can walk through the business model, look at concepts, do

Shell's Knowledge Management System, which now can be accessed by 15,000 employees, eventually will be available to all

some exercises together and then look at the best practices of others," Fitch says.

Davidson wouldn't say what the KMS cost, and he says Shell is just starting to analyze its benefits. Initially, benefits will be measured in terms of usage and the number of best practices posted to the database. Later, the company will seek to track ideas that are actually put into practice from the system.

CERNER CORP., KANSAS CITY, MO.

This provider of software and services to the health care industry turned to knowledge management technology to help it "minimize duplication of effort and maximize lessons learned," according to knowledge management team leader Rhonda Dalzell.

With 2,000 software developers and support personnel worldwide, it was easy for people to invent the same wheel in different locations. With an intranet, World Wide Web technologies, Microsoft Corp.'s Office and case-based reasoning software, it's possible to divvy up problems across the company's different units, Dalzell says.

For example, an analysis of how best to implement Windows NT can be performed by just one group, and the lessons learned can be shared easily with others, she says. Groups of employees with common missions and common problems have formed "communities of interest," similar to Internet newsgroups, on the intranet.

Cerner operates two help desks, one for internal users and one for external customers. Both share case-based reasoning software from Inference Corp. in Novato, Calif. The case management and retrieval system is called the Cerner Knowledge Reference, or CKR, pronounced "seeker."

Callers' problems and questions are entered into CKR in simple English text, and the system replies with questions for the caller. When CKR has enough information, it offers solutions based on its historical knowledge about similar situations.

"You can get to an answer without a deep knowledge of the subject," Dalzell says. For example, even a novice would know to ask whether the printer is turned on when a complaint comes in that reports aren't printing. But the help desk technician might require prompting from the case base to know that the customer might be out of print space on the disk and how to check the disk for space information.

A user can click on a "feedback" button and send information about his experiences with a particular trouble call. That information flows to the case author, who determines if the case needs to be modified or improved in some way.

A combination of process reengineering and the new CKR system enabled Cerner to shrink its backlog of outstanding problem calls from 1,700 to 700 over the course of a year, Dalzell says. Within three months, the company's client-satisfaction ratings went to the highest levels since measurement began in the late 1980s.

Besides the obvious benefits of faster and better customer service, CKR does double duty as a trainer. Dalzell says it used to take six months to train a new employee; now it takes less than three months. Human training now focuses on concepts, with details coming from the 13,000-case knowledge base.

The company just completed a successful pilot test of the Inference system in its Immediate Response Center, Dalzell says. Cerner will roll it out to other parts of the company.

Currently, only employees have access to the case base, but Dalzell says he expects that clients eventually will have some access to the system's automated problem-solving capabilities.

The Inference software is integrated with Cerner's call-tracking system so that problems that can't be resolved in the initial call get routed to the problem-resolution and case-building software in CKR.

FORD MOTOR CO., DEARBORN, MICH.

Ford uses knowledge management to "leverage intellectual capital," says Dar Wolford, manager of best-practice replication (BPR) in the company's Process Leadership group.

The results have been impressive. Out of $3 billion in cost reductions made by Ford from 1996 to 1997, $245 million can be attributed directly to BPR and a similar amount to other knowledge management initiatives, according to Wolford.

Even more amazing is that the nine-figure cost savings come from a system developed in 10 days by an intranet/Web developer and two business specialists. "The payback is in the many thousands of percents," Wolford says.

Ford's BPR program begins with a person or group putting a description of its practice into an Oracle Corp. database at Ford's BPR intranet Web site. Human review and some software filters then "cull out the gems" and send them around the company, but only to those units for which each is appropriate. A new way to apply paint might go only to paint shops, for example.

Recipients of these best-practice proposals are expected to reply to the Web site as to whether they intend to implement them and, if so, what they expect the resulting cost savings to be.

Wolford says Ford recently licensed its BPR methodology to a major supplier, which she wouldn't name. Ford will soon enhance the BPR system to allow graphics and video clips to be attached to best-practice entries in the database, she says.

David Berdish is process leadership and learning manager in Ford's Visteon unit, whose 78,000 employees make automotive parts and systems in 19 countries.

He says Visteon approaches the challenge of getting employees to use best-practice databases in a variety of ways.

Visteon gives "good Samaritan" awards to those who contribute ideas to the knowledge databases, and "copycat" awards — a free dinner for two, say — to those who use them, Berdish says.

Visteon also seeks to make employees "responsible and accountable" for contributing to and using knowledge repositories. "If I go to my management and tell them my equipment efficiency was poor, but I didn't look at the best practices, I'm going to have a lot of explaining to do," Berdish says.

"It became obvious that focusing on just the technical aspects of the business was not enough."

– Marc Davidson, associate director of the Shell Learning Center

But there's a risk in pushing knowledge-sharing mechanisms too hard, Berdish says. "Some of the ideas could be just plowed through the system the way we produce cars. Are we really getting good ideas, or are we just putting them in to get the numbers?" he says. □

Anthes is Computerworld's senior editor, special reports.

Supporting knowledge management:

YOU HAVE IT NOW

By Amy Malloy

The knowledge management market is getting crowded with new vendors popping up and existing vendors relabeling their products to squeeze into this market. The result: It's tough to know what to buy.

The good news is that analysts say most user companies already have a lot of the core technologies in-house. Analysts mention Lotus Notes and the World Wide Web as the two primary backbones for a knowledge management system. A data warehouse, document management and electronic mail are other common pieces of a knowledge management system. Most companies are missing some of the knowledge retrieval products which transform information into knowledge through collaborative filtering and semantic technology.

Besides adding newer technologies, companies need to use existing technology more effectively. "Knowledge management is really the integration of old and new technologies," says Jim Bair, research director at Gartner Group Inc. in Stamford, Conn. For example, some companies use Notes strictly for E-mail rather than using its more complex database functions for collaboration. Additionally, some search-and-retrieval products can pull information from Notes.

Users need to realize that when they go to a knowledge management vendor, they aren't getting a total solution and may not even be getting a new product. In many cases, "it's just old wine in new bottles," says Tom Davenport, a professor at the University of Texas in Austin and the director of its information management program. For example, document management vendors and mainstream database vendors' products are containers for knowledge, but it's short-sighted to say the vendors are selling knowledge, Davenport says.

THE PIECES

Companies building knowledge management systems will find they need several tools and systems to support the distribution of knowledge. Connie Moore, a vice president at Giga Information Group in Cambridge, Mass., lists the following key elements of a knowledge management infrastructure built over time:

- Open, interoperable computing platforms.
- Communication networks, including the Internet, intranets and extranets.
- Knowledge creation/analysis tools.
- External and internal content.
- Collaboration tools.
- Enterprise wide messaging.
- Web content management (browsers and search engines).
- Push and pull technologies.
- Intelligent agents.
- Case-based retrieval.
- Portable documents.
- Object databases.
- Document management.
- Process management tools.

The issue that user organizations face is how to combine those technologies to manage knowledge effectively. That will depend on what type of knowledge the organization is trying to access.

For instance, an organization may want engineers in laboratories across the world to talk to one another, Moore says. E-mail or other collaborative tools are a way to get them to share their knowledge.

CONSTRUCTION

The level of complexity can range dramatically. Using a combination of E-mail, file transfer and threaded bulletin boards, you can create a significant starter knowledge management environment, says Allan Frank, chief technology officer at Answer Think, a consulting group in Conshohocken, Pa.

A more complex design would start with a browser-type user interface, Frank says. The next layer would be the Web infrastructure or Lotus Notes, which he labels contextual navigation. Below that layer would be what Answer Think calls concept classification, which is a taxonomy for identifying the various bits of knowledge. Frank mentions Dataware Technologies Inc.'s product Dataware II Knowledge Management Suite as a good example.

The information is in data stores that are broken into structured and unstructured data. Information in data warehouses would be an example of structured data, whereas unstructured data would be documents and text-based information. Users need a way to access that information.

Most of Cambridge Technology Partners' clients focus first on content, determining what they have, how they manage it and how they should augment it, says Kirk Klassen, marketing director for the Knowledge Management Domain at the Cambridge, Mass.-based systems integrator. Once the information is located, you need a way to pull it out of various information stores. The four leading information retrieval vendors, Bair says, are Verity Inc., Excalibur Technologies Corp., Dataware Technologies Inc. and Fulcrum Technologies Inc., which was recently acquired by PC Docs Inc. When you reach inside E-mail or Lotus Notes, you get to what people collaborate, which starts to qualify as knowledge, as opposed to just information, he says. Once you have all the information in place, you need to figure out how to retrieve all the knowledge and discover relationships among pieces of data. The knowledge retrieval level is the highest level of current products, to get knowledge and not just information, you need to add those knowledge retrieval technologies, according to Bair.

KNOWLEDGE RETRIEVAL

It's tough to pin down the knowledge retrieval market at this early stage. Vendors are teaming up, and new technology is surfacing. Bair divides knowledge retrieval technologies into three categories: semantic, collaborative and visualization. Knowledge retrieval differs from information retrieval because you take information and say what is different. An example of collaborative knowledge retrieval would be Grapevine, which sells a collaborative filtering product that can sit on top of Lotus Notes or an intranet, where it will watch for information that matches the interest profile set up by the user. Collaborative filtering is the leading advance technology for knowledge retrieval instead of just information retrieval, Bair says. Other collaborative filtering vendors are Net Perceptions Inc. and Firefly Network, Inc.

Specialty products such as that from Grapevine Technologies Ltd. in Troy, Mich., are relatively inexpensive, Davenport says. Grapevine costs $25 per client access license. The key is deciding on the backbone, which for most people is the Web, he says.

Another class of knowledge management vendors provides a visual representation of the relationship among pieces of information. KnowledgeX Inc. in Atlanta, for example, lets you acquire, discover, publish and distribute knowledge obtained from various information sources such as databases and the Internet, according to the vendor. This product is useful but is still early. Davenport says, and the terminology used to describe it — knowledge mapping, modeling and display — isn't common yet.

Intraspect Software Inc. is another new vendor, Moore says. It offers a product to create a knowledge repository, or group memory, to facilitate sharing.

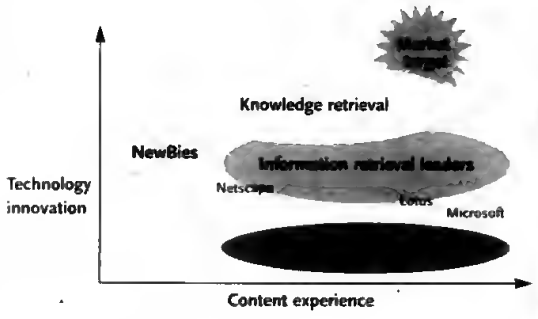
Vendors that offer semantic technology include Sovereign Hill Inc. and CompassWare Development Inc. One vendor that offers both semantic and visualization technology is Insight, which is a Xerox Corp. enterprise company. "Like many things coming out of Xerox, it is way ahead of its time," Bair says.

Currently, vendors are feeding one another out, buying technology from one another and deciding where they fit in the market. It is too early to tell who the leaders are in some of the more innovative areas, but analysts agree that there's a lot of good new technology out there that's worthy of experimentation. □

Malloy is Computerworld's associate editor, Review Center.

Knowledge Retrieval Vendor Direction

- **Information retrieval leaders implementing knowledge retrieval for early adopters**
- **Innovation stimulated by start-ups**
- **Netscape, Lotus, Microsoft and IBM poised for knowledge retrieval**



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- Sovereign Hill
- CompassWare
- Intraspect
- KnowledgeX
- WiseWire
- Lycos
- Autonomy
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- ThemeMedia

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Source: Jim Bair, Gartner Group Inc.

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THE KNOWLEDGE management market is getting crowded, with new vendors popping up and existing vendors relabeling their products to squeeze into this market. The result: It's tough to know what to buy.

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Besides adding newer technologies, companies need to use existing technology more effectively. "Knowledge management is really the integration of old and new technologies," says Jim Bair, a research director at Gartner Group, Inc. in Stamford, Conn. For example, some companies use Notes strictly for E-mail rather than using its more complex database functions for collaboration. Additionally, some search-and-retrieval products can pull information from Notes.

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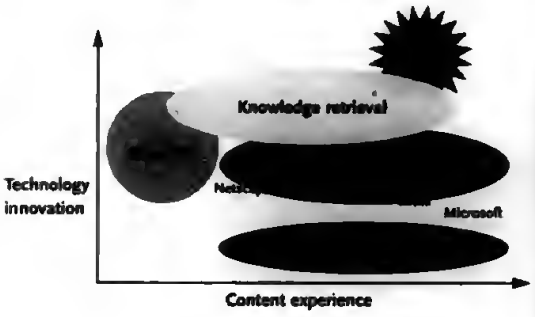

Source: Jim Bair, Gartner Group, Inc.

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Defining knowledge management:

FOUR BASIC FUNCTIONS

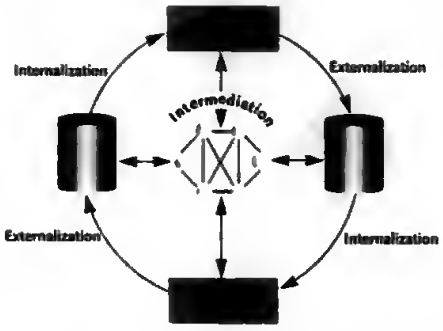
By Carl Frappaolo

THE VALUE IN A company's information assets no longer lies in the ability to store and retrieve them but in the dynamic matching of the information to specific processes and unknown situations. Corporations are measuring their information assets by their ability to leverage that information to react to market demands more effectively than their competition. This environment has led to demand for knowledge management.

By using knowledge management technology, organizations have already made startling achievements, such as the following:

- A supermarket chain increased sales of two very different product types by taking advantage of a unique relationship uncovered between the items — beer and diapers.
- A multinational pharmaceutical company cut out redundant research now that researchers are dynamically alerted to relevant or precedent knowledge that exists in-house.
- A chemical manufacturer that opened its corporate knowledge base to the front-line sales force improved its level of customer service, resulting in shortened sales cycles.

The four basic functions of knowledge management are externalization, internalization, intermediation and cognition (see diagram).



EXTERNALIZATION

Externalization is capturing knowledge in an external repository and organizing it according to a classification framework or taxonomy. At the low end are technologies that simply provide a means to capture knowledge and store it online — for example, imaging systems and databases. Workflow technology provides a slightly higher level of functionality.

The next level of externalization holds more powerful and promising search tools and document management systems that classify the stored knowledge and identify similarities among separate information sources. Building on this, a clustering approach can be used to identify hidden relationships or connections among separate bodies of knowledge within the corporate knowledge base.

Ultimately, the role of externalization is to make your captured knowledge available to knowledge seekers through internalization or intermediation.

For example, an integrated document management and data warehouse tool used by a supermarket chain kept showing similarities in buying trends for beer and diapers. Managers confirmed the pattern, which led them to stock beer and diapers in close proximity. That led to an even more co-purchases.

INTERNALIZATION

Whereas externalization seeks to discover the existence of similar bodies of knowledge, internalization tries to discover bodies of knowledge relevant to a particular user's need. With internalization, you extract knowledge from the external repository and filter it to identify what is relevant to the knowledge seeker. Internalization helps a researcher communicate a problem or point of interest and map that against the bodies of knowledge already captured through externalization.

In high-end applications of internalization, the extracted knowledge can be reformatted and presented in the most suitable manner, perhaps with some level of interpretation. Bodies of text might be reduced to key data elements that are presented as a series of charts, or an abstract of the original sources. For example, researchers at an international pharmaceutical company might submit queries relevant to their project, quickly spot earlier research that may be related to their efforts and receive a summary of the knowledge buried in numerous notebooks and reports.

INTERMEDIATION

Whereas internalization focuses on the transfer of explicit knowledge, intermediation brokers tacit knowledge. It matches a knowledge seeker with the best source of knowledge. By tracking the experience and interests of individuals, intermediation can link people who need to explore certain subjects with people who appear to harbor knowledge in that area. Consider a researcher in a pharmaceutical company: In response to a query about an unusual series of side effects of a drug, the researcher uncovers few related documents within the corporate information base. But intermediation techniques provide the researcher with the name of another researcher in another country, whose interest profile (maintained by the system) indicates that he has experience with the same type of experiment. The two individuals then can share their experiences and knowledge of the potential causes of the side effects.

Intermediation is automated through technologies such as groupware, intranets, workflow and document management systems. The first two provide an underlying platform to facilitate communication between the tacit knowledge provider and knowledge seeker.

In the case of workflow, intermediation can be accomplished via two approaches. When the rules are clear-cut, intermediation is explicitly handled. For example, if incoming paperwork is from Korea, the accounts payable clerk might automatically be put in contact with the corporate expert on Far East trade. In a less explicit situation, the workflow system would suggest the most appropriate individual to answer a question based on heuristic analysis of previous work performances by people in the organization.

COGNITION

Cognition is the application of knowledge that's been exchanged through the preceding three functions and is the ultimate goal of knowledge management.

Few technologies exist to automate the cognition process. Those that do typically employ an expert system or have an artificial intelligence component. Those systems make decisions on their own.

One insurance company uses an automated system that determines whether a worker's compensation case should be contested rather than paid. While standalone cognition systems are emerging, there is a parallel move to incorporate cognition in workflow. Typically, workflow is used to capture explicit process rules and logic. But if the workflow system was enabled to harness the knowledge captured in its audit trails over time, the workflow engine might be used to automate decisions based on similar occurrences.

For example, in an automated call center system, issues presented in a current case could be matched for similarities to preceding situations. Actions that worked well in the past would automatically be taken by the workflow system as a preferred approach.

THE STATE OF TECHNOLOGY

Ultimately, the role that technology plays in knowledge management will be second to changing corporate cultures and restructuring basic tenets of competition and value assessment. The trick is to see beyond the grand promise of a single solution and to understand how creative deployment of existing technologies can couple with new entrants in the market to benefit the organization. It is important that a knowledge management solution should exhibit the following characteristics:

Context sensitive. The solution should be able to "understand" the context of the knowledge requirement. For example, it should recognize the difference between animal reproduction and document reproduction.

User sensitive. The solution should organize the knowledge so it is most useful to the specific knowledge seekers based on their expertise and experience.

Flexible. The solution should be able to handle knowledge of any form, including different subjects, structures and media.

Heuristic. The solution should learn about both its users and the knowledge it possesses as it is used. Over time, its ability to keenly provide users with knowledge should thus improve.

Suggestive. The solution should be able to deduce knowledge needs and suggest knowledge associations beyond those expressed by the knowledge seeker.

The knowledge management technologies of tomorrow are likely to build on this foundation with visual tools that allow greater ease of navigation, more powerful and automated means of monitoring tacit knowledge, mechanisms for adding collective judgment to an information base, and more sophisticated tools for mining knowledge from uncharted sources such as audio and video. Despite the immaturity of knowledge management technologies, the benefits they offer demand your attention. □

Frappaolo is executive vice president of The Delphi Group, a Boston-based consultancy. He can be reached at cf@delphigroup.com.

In Depth

HOME sweet HOME

WHEN COMPANIES EXPAND OR MOVE TO NEW DIGS, IS IS NOW A CRUCIAL VOICE IN PLANNING

The lake in front of Manor Care, Inc.'s Maryland headquarters never freezes, and that's a win-win situation for the Canada geese and the company's IS department.

By Gary H. Anthes

Birds are drawn to the open water, which doesn't freeze because it circulates through and gets warmed by Manor Care's heating and air-conditioning equipment. That provides a great view for the company's programmers and analysts, who are arrayed in cubicles along windows that overlook the 11-acre lake.

But Manor Care's CIO and all other company officers don't get that view or any other view of this picturesque farmland near Washington. They are relegated to interior offices.

Manor Care's new headquarters is the renovated former National Geographic Society building, designed in the 1970s by Edward Durrell Stone. Company officials say it charts a new direction in workspace design, one increasingly influenced by information technology and the needs of workers with information-intensive jobs.

Not so long ago, information systems played a small role in architectural planning and workspace design outside the data center. An IS technician might be called into the odd meeting to help decide where cables were to go, but for the most part, IS people were presented with a *fait accompli* on moving day.

No more. Peter J. Olle, Manor Care's chief information officer, says IS was involved in planning for the new building from Day 1, and a 12-member planning committee included two people from IS. The role of IS was in many ways obvious — how to configure space for computer equipment, where to put connections for the company's network and so forth. But IS also played a more subtle role.

Manor Care is a $1.5 billion public company that offers health care services, including long-term care at 177 nursing facilities in 28 states. Olle says IS shaped plans for the new headquarters building based on its unique understanding of the firm's operations. "Because we support each individual business unit, in some ways we have a better idea of how different projects interact across the company than the business units do themselves," he says.

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HOMEsweetHOME

CONTINUED FROM PAGE 81

For example, Olle says, IS was working on a project to accommodate a major change in Medicare regulations, one that would require several of Manor Care's business units to work together more closely than in the past.

IS suggested that several independent customer service groups combine their telephone operations into one call center, a move that resulted in savings in equipment, lines and personnel.

"IS does have the strategic vision, because they see these cross-cuts," says Lewis J. Goetz, a principal at Greenwell Goetz Architects PC in Washington. "When we talk to senior management about where they want to go, IS should be involved."

FORWARD FACTORS

In a recent survey of 200 U.S. business executives, 90% said improvements in office design can improve productivity. Respondents said the top four design factors that boost productivity are:

Comfort	42%
Flexibility	25%

According to respondents, the access improvements that boost productivity most are:

Access to resources	35%

SOURCE: AMERICAN SOCIETY OF INTERIOR DESIGNERS, WASHINGTON

CHANGING NEEDS

But companies shouldn't wait until they make a big move before grappling with the changing needs of information workers. In a recent survey of 200 business executives by the American Society of Interior Designers in Washington, 90% said improvements in office design can improve productivity, and 68% said office designs should be reviewed at least every five years. Thirty-six percent said offices should be reviewed annually.

Office design hasn't caught up to the realities of the Information Age, explains Eric Richert, director of workplace effectiveness at Sun Microsystems, Inc. in Mountain View, Calif.

"We are no longer in an Industrial Age, and yet workplaces are fundamentally rooted in the thinking of that era," he says. "There's still the notion that everybody goes to some central place to do their work, they are assigned certain work to do, they do that throughout the day and then they go home."

In fact, Richert says, workers move from place to place during the day. They telecommute, work from hotels and collaborate digitally over long distances. They don't have precisely defined tasks or, if they do, they have a variety of options for getting them done.

Sun takes a systems view in designing workspace for its employees. A "triad" of planners from IS, human resources and architecture and construction disciplines collaborate from the beginning. Richert says. "You can't just focus on physical places. You must pay attention — literally simultaneously — to the technology that people use and the organizational and social practices that people employ to get their work done."

Richert says programmers at Sun spend up to 80% of their time in intense, private concentration and the balance meeting in groups of two to four colleagues. Their workspace consists of private offices, with small conference rooms and open spaces nearby. And the meeting spaces are equipped with the tools needed to display and share computer information and ideas.

Sun is experimenting with a new concept in videoconferencing for those software engineers. Participants don't see each others' faces — which is rarely necessary — but they can easily share graphics, documents, handwritten images and "great audio." Each member of remotely collaborating groups can see and hear the same thing at the same time, Richert says.

FIRST COME, FIRST SERVED

That new approach to videoconferencing is an example of how considerations of physical space, information technology and human factors converge, Richert says.

Cisco Systems, Inc. gives its most mobile employees no permanent assigned space. Employees arrive in the morning and get a place to sit on a first-come, first-served basis — some in offices, some in small private areas and some in open areas. "Sometimes what we get is what we ask for, and sometimes it's what's left," says Maria van Overbeek, workplace strategist at the San Jose, Calif., company.

Van Overbeek plugs in to Cisco's network from one of those spaces. Her telephone is routed there, and her paper files are wheeled in from a central area, if necessary.

She says any possible loss of status from not having a permanent office is more than made up for by the greater productivity and flexibility it gives her.

"It's really transparent where I am working, and I love the freedom," she says.

But where does she put her African violets and other office memorabilia? "I keep the pictures of my kids in my desktop system, not in little frames on my desk," she says.

Van Overbeek agrees that the IS manager no longer should be relegated to a minor support role in work-space design.

"Now that we've expanded the concept of the office beyond the conventional four walls, the IS group provides the incredibly important and enabling tools to allow groups to spread out," she says.

Mary Breuer, a senior vice president at HOK, Inc., an architectural firm in San Francisco, has a simple prescription for people planning workspace in the information era. "Give users everything they want."

She says real-estate people have for too long dictated cost-saving measures that rob users of their happiness and productivity. That's penny-wise but pound-foolish at a time when personnel costs far exceed the cost of physical space, she says.

"If your programmers want three or four computers apiece and 160 square feet of space to work in, just give it to them," Breuer says. "Forget about the latest design trends. We call that, 'The user is the customer.' " □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

CUBE controversy

When Manor Care moved to its new headquarters in Gaithersburg, Md., last year, all but 40 of 1,200 employees — half of whom had offices earlier — went into cubicles. The company hoped to improve communication and accessibility and to save 10% to 15% in floor space.

But despite the lake views, there was some resistance to cubicles, Manor Care CIO Peter J. Olle admits. But no one left the company over the issue, he says.

Laura Benedict-Densok, director of change integration, gave up her private office for a cubicle. It took some getting used to. "At first we were very, very quiet," she says. Now the noise level has risen, and Benedict-Densok says she has learned to filter out noise but pick up key phrases from remote conversations she may want to join. "And I'm more comfortable now as a manager walking around dropping in on my direct reports," she says. "It's less formal."

But some experts say cubes never make sense. "They are the worst of all worlds," says Sun's Eric Richert. "The *Dilbert*-type cubes . . . provide neither enough closure for audio privacy nor enough openness so people have visual contact with each other."

Richert says programmers and other technical people in cubicles do everything possible to take away the openness. "They bring in stereos and put on headphones, they avoid normal working hours, they put chairs across the opening to signal, 'Don't bother me.' "

Richert says, "People say they need open offices — cubes, in other words. What they are really saying is they need ways to get their programmers to communicate better."

— Gary H. Anthes

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▸ INDUSTRY WATCH: HEALTH CARE

SYSTEMS IN STITCHES

Interface, year 2000 skills may be just what the doctor ordered

By Roberta Fusaro

IT ISN'T BRAIN SURGERY, but trying to get two different mainframes at two hospitals to work together is no less complex. That IS operation, if performed successfully, can produce a cost-effective body of patient, billing and diagnostic information. Or it can produce a monster of a data-processing problem.

Riverside Methodist Hospital in Columbus, Ohio, is one hospital that is attempting such systems suturing. The hospital merged with nearby Grant Hospital approximately 18 months ago and is still combining the two hospitals' clinical and information systems staffs.

Because of the merger, Riverside's 120-member IS department has one strategic initiative: Create one system across the board. All projects and recent hiring have been geared toward that goal, says Joyce Tanner, assistant director of IS applications.

"We had to take a look at the software that we have and make some selections based on potential business benefits. In doing so, there is a lot of re-engineering of work processes, [and] operational changes. There is a lot going on behind the scenes," Tanner says.

Health care consolidation is all the rage these days, analysts say. The idea is to consolidate and get more efficient. The players in this field include health maintenance organizations, hospitals, physicians in private practice and insurers.

Michael Palmer, a health care industry analyst at Andersen Consulting in Chicago, says this industry has been on a roller-coaster ride for half a decade. First came Hillary Rodham Clinton's pass at trying to rehabilitate the nation's ailing health care system. Then President Clinton and Congress tinkered with Medicare funding. Three major trends have emerged as a result: consolidation, price competition and increasing costs.

In the past five years, the industry has shrunk from about 40 large health care players to a little more than half that, Palmer says. "Health [organizations] are deciding to grow by acquisition in general, because they realize there is a limited future in organic growth," he says.

Despite the reduction in health care players, there are still opportunities for new information technology blood in several regional markets. Sheila Quinn, human resources representative at the University of Nebraska Medical Center in Omaha, says the hiring market in the area for recent IT graduates is very encouraging — even within health care.

But that doesn't mean entry-level IT jobs are easy pickings. "For recent grads, it's always a tough situation, where you come out with the education but not the experience," Quinn says. "Our IT department relies heavily on experience; they want to know that you've done it before."

The Omaha hiring market is very competitive, according to Jim Veline, associate director for information technology in clinical computing at the hospital. The need for IS professionals in Omaha is high relative to other cities nationally, he says. But the IS skills needed in health care are similar to those needed in other industries: workstation support, client/server, Hypertext Markup Language, database and World Wide Web experience along with conventional mainframe programming skills.

For those students looking to enter the market, Veline says they should pursue a broad set of skills overall and get an internship. A semester of internship work is far more valuable than classroom work for developing analytical skills, he says.

Mergers aside, the larger the organization, the larger the IS needs, he says.

Project interfaces have become a big area of development in many hospitals, Tanner says. Other hot skills include client/server skills, experience with packaged financial and human resources applications and data warehousing.

PACKAGED APPS

Palmer says legacy maintenance, integration and year 2000 skills account for about 80% of the IT skill sets needed within the health care organization. By 2002, those skills should account for only about 40% of workforce skills. The rest will be focused on packaged applications, as the industry moves away from costly in-house coding by programmers and toward less-expensive shrink-wrapped software.

Health care always has been several years behind the general technological curve, Palmer says. It is often too expensive for a nonprofit hospital, for example, to get a new computing system. The easier fix has been to take the Band-Aid approach, patching as they go along.

"Now the year 2000 comes along, and IS managers have to make some really serious decisions," Palmer says. The consequences of failure here are great, he says, citing examples of medical devices such as intravenous pumps that have failed year 2000 compliance tests.

Other industries might face a bad financial quarter or two, but "nothing will affect your [health] organization like people dying will," he says. □

Fusaro is Computerworld's assistant managing editor.

IS SALARIES IN THE HEALTH CARE INDUSTRY

Average total compensation (base salary plus bonuses) for IT professionals

JOB TITLE	HEALTH CARE INDUSTRY
Chief information officer	$108,000
Director of IS/MIS	$72,000
Director of systems development	$69,000
Project manager	$63,000
Project leader	$60,000
Webmaster/Web designer	$57,000
Senior systems programmer	$56,000
Director of IS operations	$55,000
Database manager	$54,000
Database analyst	$53,000
Senior systems analyst	$52,000
Senior programmer/analyst	$49,000
Systems programmer	$48,000
Systems analyst	$46,000
LAN manager	$45,000
Programmer/analyst	$39,000
PC technical support specialist	$34,000

Source: Computerworld's 1997 Annual Salary Survey

EXECUTIVE TRACK

Thomas J. Aruffo has been named vice president of information management and technology at Bay State Gas Co. in Westboro, Mass. He reports to Joel L. Singer, president and chief operating officer. Aruffo joins Bay State from Fidelity Investments in Boston, where he was vice president of information systems. Prior to that, he was director of IS at Prudential Insurance Company of America.

Donald A. Barksdale has been named senior vice president and chief information officer at Hasbro, Inc. in Pawtucket, R.I., a leading manufacturer of toys, games, interactive software and infant care products. Barksdale has more than 20 years of information technology management experience. He reports to John T. O'Neill, executive vice president and chief financial officer. Barksdale was previously senior director of applications development at Anheuser-Busch Corp.

James A. Crowe has been named CIO at Constitution Reinsurance Corp. in New York. He reports to Executive Vice President and CFO William K. Lowry Jr. Prior to joining Constitution Re, Crowe held IS positions at Lockheed Martin Corp., Deutsche Bank AG and General Electric Co.

Andree Fredrick has joined direct marketing company Lands' End, Inc. in Dodgeville, Wis., as director of technology integration. She is responsible for all systems development, end-user computing, support and training. Before joining Lands' End, Fredrick was director of IT project management and strategic planning at Cuna Mutual Group in Madison, Wis., where she had spent her entire IS career.

Donald Gentry has been named executive director of IT and CIO at the National Automobile Dealers Association in Washington. He oversees the group's mainframe computer operations, business applications systems, PC/LAN support, telecommunications and technology planning. He was previously vice president and CIO at Amtrak Corp.

Keith W. Hammer has been named vice president and CIO at Mars Music and Recording Superstores in Fort Lauderdale, Fla. Hammer comes to Mars from The Dart Group Corp., where he was senior vice president and CIO at both Dart and Crown Books Corp. He was previously director of applications development at Circuit City Stores, Inc.

Jeremy C. Jaffe has been named vice president of electronic commerce at Liberty Financial Cos. in Boston. He joins Liberty from its annuity unit, Keyport Life Insurance Co., where he served as assistant vice president of strategic marketing.

Iang Jeon has joined Scudder Funds Marketing in Boston as a vice president, with responsibility for electronic commerce. Jeon is responsible for Scudder's Internet strategy and for delivering content and services to mutual fund investors via the Internet and online services. Prior to joining Scudder, Jeon was vice president of electronic commerce at Liberty Financial.

H. David Lambert has been named vice president of information services and CIO at Georgetown University in Washington. He was previously vice president of IT at Cornell University in Ithaca, N.Y.

Christopher Laping has been promoted to director of IS at Communications Equity Associations, a Tampa, Fla., investment and banking firm that specializes in cable television, broadcasting, telecommunications, entertainment and new media.

Luana Malott has been named vice president of IT at Lennox International, Inc. in Dallas, parent company of Lennox Industries, Inc., Heatcraft, Inc., Lennox Global, Inc. and Armstrong Air Conditioning, Inc., leading companies in air conditioning, ventilation and commercial refrigeration. Malott replaces former IT Vice President John Stevenson, who left the company in November to assume the leadership of a family-owned business in Pennsylvania.

Michael F. Moore has joined American Electric Power Co. in Columbus, Ohio, as senior vice president of IS and CIO. He reports to Peter J. DeMarla, executive vice president of administration and chief accounting officer. Prior to joining American Electric, Moore was senior vice president and CIO at Great Western Bank in Los Angeles.

Jeanine M. Salvati has been named vice president of corporate and back-office systems at Deutsche Financial Systems in St. Louis, a leading financial services company. Salvati has more than 18 years of IT experience, including positions at Unisys Corp., Citicorp Mortgage Co., Centerbank and KPMG Peat Marwick LLP.

The Society for Information Management in Chicago has inducted **John Stevenson** as president of the society for 1998. Stevenson is vice president of IT management at Bristol-Myers Squibb Global Business Services. □

COOL CAREER SITES

Paying the game — Web sites on IT salaries

BY LESLIE GOFF

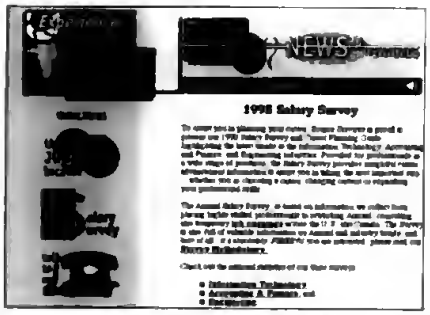
Source Services Salary Survey
www.experienceondemand.com/features/salary.html

Source Services, a nationwide information systems recruiting firm, posts a regularly updated IS salary survey (results currently posted are for midyear 1997) that covers all levels of base salary for virtually every position in an IS organization.

You can preview the salaries for more than 40 jobs, including systems development, database management, network administration and data center. You also can fill out an online order form to request a free copy of the full survey, which covers 50 major North American markets and includes an IS career planning guide.

Pencom's 1997 Interactive Salary Survey
www.pencomsi.com/industry.html

Pencom's salary survey is straightforward, speedy and specific. Rather than comb through a long list of job titles and salaries, you tell it where you live, your current salary, years of experience, skills, industry and the type of position you're seeking. It tells you the typical earnings for your profile. For example, a database administrator in the Midwest with three to six years' experience in the manufacturing field managing networks of 50 to 100 nodes, high-end workstations, Oracle, World Wide Web servers and various flavors of Unix can earn $44,000, according to the survey.



Source Services' site covers more than 40 jobs

DataMasters 1997 Salary Survey
www.datamasters.com/survey.html

DataMasters, a nationwide IS staffing firm, has archived its IS salary surveys dating to 1990. It not only covers the major IS job titles, from chief information officer to PC applications specialist, but it also breaks down the information by five geographic regions. DataMasters also provides projected averages for bonuses that will be paid this year to IS professionals and offers cost-of-living calculators for 399 U.S. job markets (*www.datamasters.com/cgi-bin/col.pl*).

Select the state you live in and the state you are interested in moving to, then plug in your current salary to find out what you need to earn in the new location to maintain your standard of living. If you make $65,000 per year in Chicago, the calculator estimates you would need to earn $68,636.36 in Philadelphia.

The International Salary Calculator
www.homefair.com/homefair/cmr/salcalc.html

This is an alternate salary calculator, designed specifically for those who are preparing to move. After calculating salary, the site offers links to real estate agents in your current city and prospective city. It also offers a relocation calculator, advice on negotiating your new mortgage and other information you need to plan your move.

The calculator generates salary estimates for every major city and suburb in the U.S. and for cities worldwide — from Algiers to Zimbabwe. You can also use it to reality-check the results given by other online salary calculators.

For example, if you're moving from Chicago to Philadelphia and earn an annual salary of $65,000, the calculator generates an estimate of $47,714 required to maintain your standard of living in Philadelphia, significantly different from the DataMasters' survey figure.

Goff is a freelance writer in New York.

COOL CAREER BOOKS

New career titles on IS jobs and job hunting

CareerXRoads: The 1998 Directory to the 500 Best Job, Resume and Career Management Sites on the World Wide Web
By Gerry Crispin and Mark Mehler
MMC Group, Kendall Park, N.J., 1998; 373 pages; $22.95

Useful is the word for this humble desktop companion. CareerXRoads offers a capsule review of 500 World Wide Web sites that can be helpful in developing your career or landing a job. Although most of these sites don't directly pertain to information technology, there are enough relevant sites to make the book worth its price. Examples of interesting and offbeat sites range from the Internet Career Interest Assessment and ShowBiz Jobs to more mainstream locations such as the National Association of Computer Consulting Businesses Job Board and Resume Bank.

Rather than clicking, wading and waiting your way through dozens of Web pages to find what you need, CareerXRoads tells you exactly where to go and gives you a good idea of whether it's worth your time to go there at all. An index adds value by listing sites by industry, cross-referencing sites and indicating which sites permit free resume posting. — *Alan R. Earls*

Career Bounce-Back! The Professionals in Transition Guide to Recovery & Reemployment
By J. Damian Birkel, with Stacey J. Miller
Amacom, New York, 1998; $14.95

As his title punctuation suggests, Birkel is a cheerleader. He's one of those zealously optimistic types who aims to transfer some of his gung-ho, can-do spirit to the reader. But unlike many authors who offer little substance behind their chirpy prose, Birkel's organization, Professionals in Transition, has garnered much useful information. It can be a valuable tool to readers traveling the difficult, often psychically painful, road to re-employment.

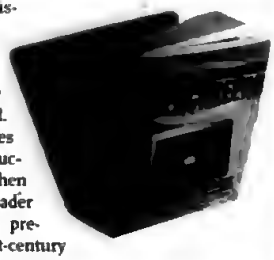
The bulk of the book gives practical, proactive advice on being laid off. It offers a clear, concise, step-by-step program that begins with advice on how to orchestrate a graceful (and perhaps lucrative) exit when you're fired. It moves on to adjusting to your unemployed status, actively directing or redirecting your career path, setting up informational interviews, assessing the pros and cons of search firms and, finally, landing a new job and negotiating the optimal compensation package.

Of special interest are tips on maximizing the online job hunt, networking on the World Wide Web and producing fax- and scanner-friendly letters and resumes.

Although much of the information here has appeared piecemeal in other places, Birkel has put it together in a sensible, pragmatic and, yes, optimistic, volume. — *Melanie Menagh*

Cybercareers: Everything You Need to Succeed!
By Mary E. S. Morris and Paul Massie
Sun Microsystems Press, Mountain View, Calif., 1998; 352 pages; $24.95

Cybercareers promises, among other things, to acquaint readers with all the buzzwords they need to know to succeed. The book accomplishes that goal in spades. Its success is more dubious when it comes to its broader promise — that it will prepare readers for 21st-century careers.



Quite simply, the authors offer too many concepts and too much information without sufficient structure or analysis.

To be sure, this weighty tome has some valuable points. But in its repackaging of today's most popular nostrums, the techno-wheat and the techno-chaff get equal billing. — *Alan R. Earls*

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Loyola University Medical Center (LUMC) realizes that cutting edge, state-of-the art technology has changed health care forever. Yet despite all that technology provides, it is individual talent that will continue to utilize and push technology to its' limits into the next century.

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Director of Applications Development

Experience:
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- Knowledge of large healthcare organizations
- 10 years broad dataprocessing experience
- 3 years supervising application development

Additional skills a plus: SMS' SIGNATURE, ADABAS/NATURAL, COBOL, CICS, Oracle, and Windows development tools. Please reference position #DAD

Data Analyst/ Medical Informatics

Experience:
- Knowledge of large healthcare organizations
- Medical management, HEDIS, health care practice management and financial systems
- inhouse developed and vendor software within complex network and mainframe environments
- extensive data modeling, and designing/developing systems facilitating end-user access to data
- 10 years broad dataprocessing experience
- 3 years responsibility for data analysis systems

Additional skills a plus: SMS' SIGNATURE, ADABAS/NATURAL, COBOL, CICS, Oracle, and SQL or other data query tools. Please reference position #DMI

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- Knowledge of large healthcare organizations
- 10 years broad dataprocessing experience
- 3 years supervising application development

Additional skills a plus: SMS' SIGNATURE, ADABAS/NATURAL, COBOL, CICS, Oracle, and Windows development tools. Please reference position #DAD

Data Analyst/ Medical Informatics

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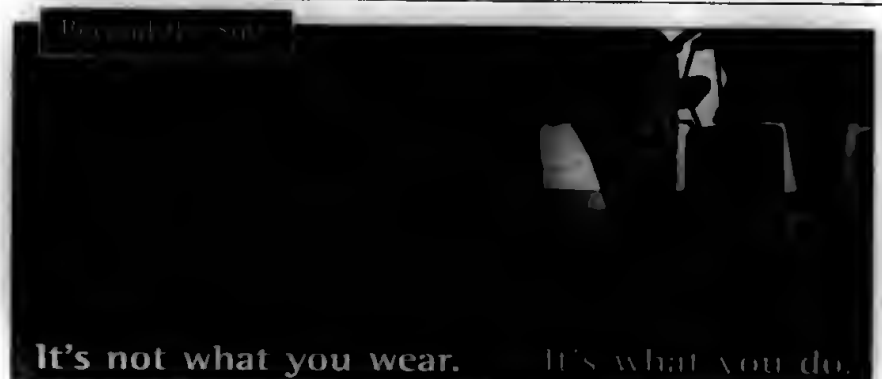

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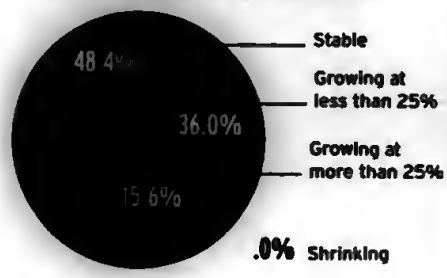

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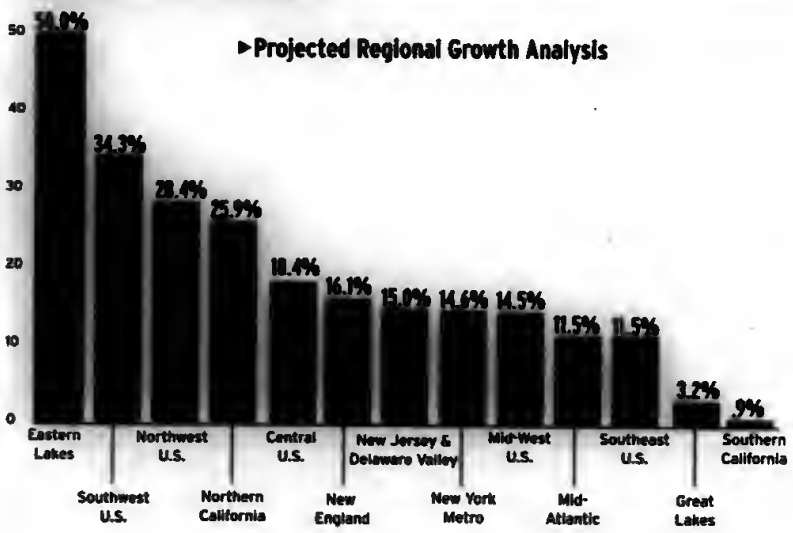

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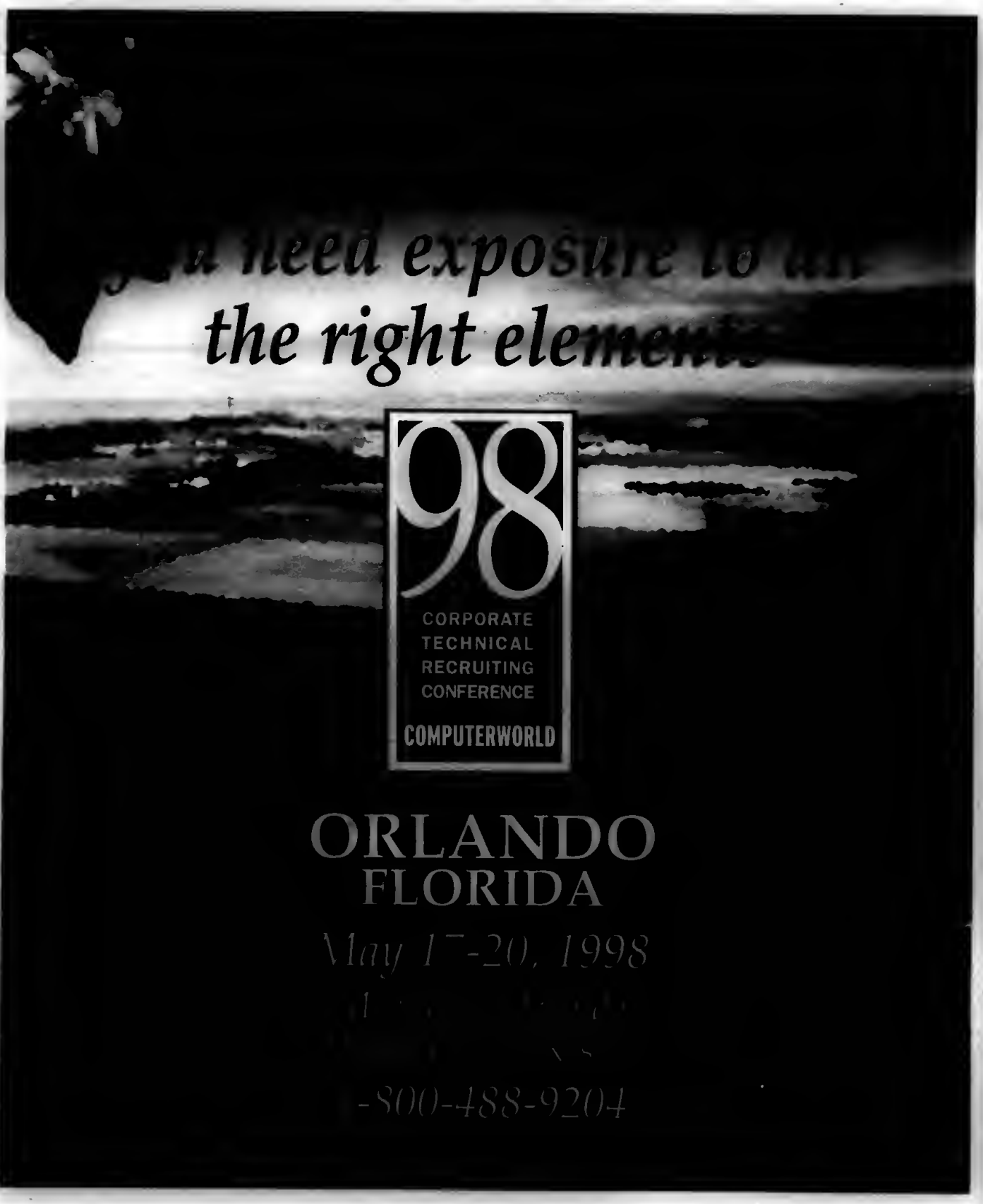
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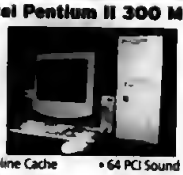

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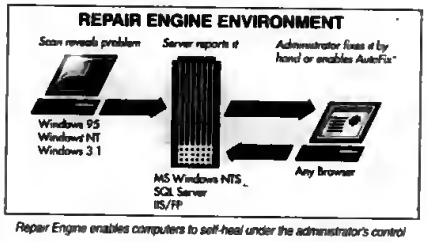

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RFP release date is February 23, 1998 at 9:30 a.m. and may be picked up at the location below. Proposal submission deadline is 4:00 p.m. on March 16, 1998.

NYCHA's coordinator for all matters concerning this RFP is:

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Deputy Director, Administration
Systems & Computer Services Department
New York City Housing Authority
250 Broadway, Room 1212
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The Week in Stocks

Gainers

PERCENT	
Spyglass Inc.	27.2
Cayenne Software Inc.	25.5
Netrix Corp.	25.0
Centura Software	24.3
ObjectShare, Inc.	22.5
Systemsoft Corp.	14.5
Aris Corp.	13.7
Dell Computer Corp. (H)	12.8

DOLLAR	
Dell Computer Corp. (H)	14.19
Intel Corp.	6.81
Lucent Tech. (H)	6.63
Xerox Corp.	3.44
Aris Corp.	3.38
BMC Software Inc. (H)	3.19
Stratus Computer Inc.	3.13
Analog Devices Inc.	3.00

Losers

PERCENT	
Intersolv Inc.	-18.2
Corel Corp.	-15.6
Concentric Network Corp.	-14.3
Visio Corp.	-13.3
QMS Inc.	-11.3
Informix Corp.	-10.8
Rambus Inc.	-9.5
Yahoo Inc. (H)	-8.6

DOLLAR	
Visio Corp.	-5.34
Rambus Inc.	-4.75
Microsoft Corp.	-4.69
Yahoo Inc. (H)	-4.38
Excite Inc.	-4.25
Intersolv Inc.	-3.69
Qwest Communications Int'l Inc.	-3.50
Computer Sciences	-3.38

INDUSTRY ALMANAC

CA continues uphill battle

So far, it's the shareholders of Computer Associates International, Inc. (NYSE: CA) who are paying the price in CA's bid to acquire Computer Sciences Corp. (NYSE: CSC).

CA's stock has dropped about $10 to approximately $48 since the company's Feb. 11 offer of $108 per share for CSC stock.

"I'm not sure why Computer Associates has decided to crush their stock to buy a company that doesn't want to be bought," says Gary Helmig, an analyst at SoundView Financial Group, Inc. in Stamford, Conn.

The Islandia, N.Y.-based maker of business software wants CSC so it can provide users with end-to-end service. CSC is one of the three largest service companies in the U.S.

Companies are looking for complete solutions, says Dave Kelly, an analyst at Hurwitz Group, Inc. in Framingham, Mass. "A combination of the year 2000 problem and the complexity of today's environment is really draining a lot of organizations' ability to get projects done," he says.

The decline in CA's stock reflects investor concern that the $9.2 billion purchase will leave the company with too much debt and hurt future earnings.

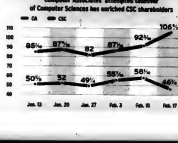
And the takeover could risk staff retention. CSC's major asset is the more than 42,000 employees who staff its outsourcing operations. If key employees "feel that they could do better elsewhere, [CA] could be buying a hat full of rain," Helmig says.

But investors in El Segundo, Calif.-based CSC have been making a killing. CSC stock sold in the mid-$80 range last month; it is now around CA's offer of $108.

CSC last week formally rejected CA's bid, but CA plans to forge ahead with a hostile takeover. — Patrick Thibodeau

DIFFERENT DIRECTIONS

Computer Associates' attempted takeover of Computer Sciences has enriched CSC shareholders



Exch	52 Week	Range		Feb 20 2pm	Wk Net change	Wk Pct change
Communications and Network Services						
COMS	59.69	24.00	3COM Corp	31.25	2.25	6.1
AIT	45.50	27.63	Ameritech Corp	41.44	0.00	0.0
ASND	65.25	22.00	Ascend Communications	34.94	0.25	0.7
T	38.50	50.75	AT&T	62.44	1.06	1.7
BNYN	6.63	1.14	Banyan Systems Inc	1.81	0.31	1.6
BAY	41.38	15.50	Bay Networks Inc	31.00	0.50	1.4
BEL	61.31	59.75	Bell Atlantic Corp	88.75	0.00	0.1
BLS	62.50	19.50	BellSouth Corp	56.14	1.75	3.1
BRKT	21.75	6.25	Brooktrout Technology	14.61	0.11	2.2
CS	38.50	12.63	Cabletron Systems	15.44	0.50	4.1
CGRM	21.88	8.50	Centigram Communications	12.88	0.11	1.0
CSCO	38.38	30.19	Cisco Systems Inc	65.11	0.00	0.6
CMNT	6.49	1.11	Computer Network Tech	4.11	0.13	2.6
CNCX	19.00	7.50	Concentric Network Corp	12.11	2.00	14.5
DIGI	32.75	11.00	DSC Communications	19.25	0.28	1.4
FORE	30.75	10.00	FORE Systems Inc	13.56	1.44	8.1
GDC	6.50	1.75	General Datacomm Inds	1.15	0.00	1.7
GSX	51.00	33.11	General Signal Networks	19.50	0.21	0.8
GTE	53.75	40.50	GTE Corp	55.75	0.50	1.0
LU	100.94	48.00	Lucent Tech (H)	100.44	6.63	1.0
MADGF	17.00	3.25	Madge Networks NV	4.88	0.25	4.9
MCIC	38.31	27.41	MCI Communications Corp	47.81	0.38	4.8
NETM	5.25	2.00	NetManage Inc	3.81	0.00	2.2
NTRX	4.00	0.63	Netrix Corp	1.88	0.38	25.0
NCDI	14.50	5.00	Network Computing Devices	10.41	0.11	1.2
NWK	22.38	11.25	Network Equipment Tech	12.56	0.19	1.3
NN	69.38	19.94	Newbridge Networks Corp	22.50	0.88	3.8
NT	56.94	41.00	Northern Telecom Ltd	38.11	0.81	1.1
NOVL	13.00	6.00	Novell Inc	6.09	0.50	1.8
ODSI	10.25	3.16	Optical Data Systems Inc	6.50	0.21	4.7
PCTL	17.63	5.63	PictureTel Corp	7.56	0.10	2.5
PTON	3.50	1.03	Proteon Inc	1.06	0.03	2.6
RACO	4.50	1.00	Racotek Inc	3.00	0.00	2.0
RADS	29.38	7.00	Radiant Systems Inc	17.75	0.00	0.0
RETX	7.61	3.38	Retix	4.31	0.03	0.7
SBC	79.00	49.25	SBC Communications	76.25	0.38	0.5
SFA	24.94	14.00	Scientific Atlanta Inc	17.31	0.44	2.3
SHVA	17.75	8.00	Shiva Corp	32.25	0.13	1.0
FON	62.50	41.88	Sprint Corp	60.19	1.13	1.9
QWST	74.00	26.38	QWest Communications	65.88	3.50	5.0
SMSC	18.11	8.00	Standard Microsystems Corp	10.25	0.09	3.2
USW	50.94	11.13	U S West Inc	50.00	2.44	5.1
KRC	21.00	7.50	Kecom	10.89	0.50	5.0
XYLN	24.63	12.50	Xylan Corp	22.50	2.31	13.5
PCs and Workstations						
AAPL	29.50	12.75	Apple Computer Inc	19.94	0.38	1.9
CPQ	39.75	14.25	Compaq Computer Corp	33.81	1.50	3.9
DELL	125.00	50.50	Dell Computer Corp (H)	125.00	14.10	12.8
GTW	80.25	39.50	Gateway 2000 Inc	43.00	1.00	2.3
HWP	72.94	60.13	Hewlett Packard Co	63.08	2.00	3.0
MUEI	25.58	8.44	Micron Electronics Inc	13.50	0.13	0.6
NIPNY	74.00	38.63	NEC America	50.50	3.13	5.2
SGI	30.11	50.94	Silicon Graphics	13.94	1.00	8.7
SUNW	53.31	25.00	Sun Microsystems Inc	46.00	1.25	2.8
Large Systems						
DGN	37.94	13.38	Data General Corp	18.19	0.81	4.3
DEC	64.33	25.00	Digital Equipment Corp	50.63	1.25	2.1
IBM	113.50	63.63	IBM	102.00	0.81	0.8
MDCD	5.75	2.00	Meridian Data Inc	3.03	0.13	3.6
NCR	43.50	25.63	NCR Corp	11.50	0.50	1.3
PRCM	20.13	7.00	ProCom Technology Inc	10.25	0.00	0.0
SQNT	31.25	14.50	Sequent Computer Sys	19.94	0.94	4.5
TEXM	6.00	2.19	Texas Micro Inc	3.88	0.38	10.7
SRA	38.75	30.75	Stratus Computer Inc	49.50	3.13	6.3
UIS	16.75	3.75	Unisys Corp	10.00	0.11	0.7
Software						
ADBE	53.13	32.50	Adobe Systems Inc	43.81	0.44	1.0
AMSWA	15.63	5.00	American Software Inc	7.63	0.44	5.4
APLX	13.13	3.11	Applix Inc	3.59	0.41	4.8
ARSW	53.25	11.00	Arbor Software	43.75	1.56	3.4
ARDT	12.25	5.00	Ardent Software	16.06	0.25	2.4
ARSC	32.50	17.75	Aris Corp	28.00	3.50	13.3
ADSK	51.13	28.88	Autodesk Inc	41.01	2.59	5.8
BGSS	45.50	27.50	BGS Systems Inc	43.81	0.44	1.0
BMCS	77.63	39.63	BMC Software Inc (H)	77.63	3.19	4.3
BOOL	38.25	19.63	Boole and Babbage	33.13	0.75	2.3
BORL	12.19	5.00	Borland Int'l Inc	9.69	0.31	5.3
BOBJY	14.60	6.63	Business Objects	14.19	1.19	6.1
CAYN	5.75	0.94	Cayenne Software Inc	2.00	0.41	25.3
CNTRC	5.13	0.88	Centura Software	1.44	0.38	24.3
CHKPF	50.50	16.25	Checkpoint Software	41.00	0.25	0.6
COGNF	35.00	37.63	Cognos Inc	24.00	0.25	1.0
CA	50.63	24.88	Computer Associates	47.11	1.94	3.0
CPWR	45.50	14.61	Compuware Corp (H)	43.00	1.50	3.4
CSRE	15.00	4.25	Comshare Inc	8.50	0.00	0.0
COSFF	7.13	1.38	Corel Corp	2.38	0.44	15.6
DWTI	*5.38	2.13	Dataware Technologies Inc	3.38	0.14	3.8
FILE	33.50	9.50	FileNet Corp	21.13	0.63	2.0
FRTE	33.25	4.94	Forte Software	8.31	0.09	1.5
FTPS	8.50	1.50	FTP Software Inc	1.66	0.16	9.6
GPSI	35.50	10.38	Great Plains Software Inc	27.63	2.50	8.3
HUMCF	94.25	22.00	Hummingbird Comm Ltd	31.00	1.06	3.5
HYSW	80.00	13.00	Hyperion Software Corp	38.50	2.63	6.3
IRIC	00.00	11.75	Information Resources	14.38	0.50	3.5
IFMX	10.50	4.00	Informix Corp	8.00	0.97	10.8
INGR	16.59	6.25	Intergraph Corp	9.19	0.00	0.0
LEAF	4.00	0.81	Interleaf Inc	4.25	0.09	2.0
ISLI	21.25	6.25	Intersolv Inc	16.50	3.09	15.3
INTU	52.25	30.00	Intuit Inc (H)	49.00	1.50	3.0
JDEC	80.63	24.00	J D Edwards Co	30.00	0.50	1.6
TLC	20.50	5.50	Learning Co (The)	13.94	0.50	3.0
LGWX	12.00	4.13	Logic Works	16.13	0.00	0.0
MAPS	14.25	7.00	MapInfo Corp	12.50	0.13	1.0
MATH	3.13	2.19	MathSoft	3.94	0.03	1.1
MENT	13.13	6.50	Mentor Graphics	9.94	0.00	0.6
MIFGY	52.00	50.75	Micro Focus (H)	30.00	1.25	4.0
MCXI	10.88	4.38	Micrografx Inc	10.50	0.38	3.8
MSFT	160.06	87.50	Microsoft Corp	153.50	4.69	3.0
OBJS	1.66	0.44	ObjectShare Inc	1.53	0.00	22.5
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ORCL	43.13	17.75	Oracle Corp	24.75	1.00	4.4
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SAPE	00.00	10.00	Sapient Corp	34.88	3.13	4.0
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SOTA	21.94	8.00	State of the Art	21.75	0.00	0.1
SSW	48.44	27.38	Sterling Software Inc (H)	38.81	1.19	2.5
SDRC	30.00	11.25	Structural Dynamics Research	26.38	0.00	0.6
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SYMC	27.75	12.00	Symantec Corp	25.01	0.61	3.1
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SYSF	16.00	1.00	Systemsoft Corp	1.94	0.50	14.5
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WALK	18.25	10.50	Walker Interactive Systems	14.94	0.00	2.0
WALL	29.11	11.31	Wall Data Inc	14.73	4.75	4.4
WANG	37.[illegible]	19.00	Wang Laboratories Inc (H)	26.11	0.00	0.3
Internet						
AMZN	86.00	13.75	Amazon.com	61.50	1.50	[illegible]
AOL	117.94	11.00	America On Line (H)	117.94	2.38	2.1
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SEEK	14.50	0.38	Infoseek Corp	15.75	0.00	0.0
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EGGS	11.13	3.63	Egghead Discount Software	6.11	0.61	7.4
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ICO	59.63	19.75	Inacom Corp	29.75	0.50	1.7
INEL	6.00	3.25	Intelligent Electronics	5.01	0.19	3.2
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MICA	29.75	30.00	Microage Inc	12.68	0.75	5.8
PAYX	51.75	25.63	Paychex	40.63	0.19	0.4
PMS	75.58	41.50	Policy Management Sys (H)	73.37	0.81	1.1
REY	25.63	13.75	Reynolds and Reynolds	00.59	1.19	5.5
SCBI	22.25	50.00	SCB Computer Tech Inc	19.38	0.38	1.9
SEIC	56.88	18.75	SEI Corp (H)	51.00	2.25	4.2
SMS	75.00	38.75	Shared Medical Systems (H)	75.00	0.06	1.2
SSPE	23.50	10.00	Software Spectrum Inc	25.71	0.50	2.3
SDS	33.38	00.75	SunGard Data Systems (H)	33.50	1.00	3.1
VST	13.23	6.50	VanStar Corp	15.50	1.25	8.8

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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Test packaged apps for year 2000 fixes

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and analysts dealing with the issue warned.

"It is a huge problem for us," said the vice president of a major financial services company in New York who didn't want to be identified. "We are setting apart system and manpower resources for doing parallel testing of these products along with [in-house applications]," he said.

VENDOR-OWNED

A major constraint for users is that, unlike in-house software, source code for mainframe packaged applications is owned by the vendors. That means users can take little remedial action beyond waiting for the vendors to announce year 2000-compliant versions.

Users said most vendors either have announced or claim they are on the way to releasing such versions, but testing the fixed applications takes time.

Other issues that could trip up users include a lack of adequate information about how vendors are fixing their products, uncertainty about how repaired products will interact with other applications and the cost involved in testing for compliance.

Giga Information Group in Stamford, Conn., for example, estimates that users will spend more than half their total year 2000 repair budget just in the testing phase. The cost will come from having to buy or upgrade hardware and software and — depending on the scope — from having to throw more bodies at the problem.

LEE BRAVER

"I would recommend that [companies] don't underestimate [year 2000 testing]."

– Dan Clark, Trigon Blue Cross/Blue Shield

DON'T UNDERESTIMATE

"I would recommend that [firms] don't underestimate the task," warned Dan Clark, director of application services at Trigon Blue Cross and Blue Shield in Richmond, Va.

Trigon, for example, got in touch with vendors more than a year ago, has inventoried all its products and knows exactly what needs to be done. But the company still figures it will need the rest of the year to test everything.

"It doesn't matter if all the rest of your software works fine. . . . If your third-party products aren't fixed, you have a problem," agreed Charles Jumonville, a data center manager and member of IBM's AFCOM user group in Baton Rouge, La.

Even so, a recent survey of more than 400 companies — ranging in size from $10 million organizations to companies worth several billion dollars — by International Data Corp. (IDC) in Framingham, Mass., shows that a substantial number may be underestimating those issues.

Nearly 30% of corporations surveyed that earn more than $100 million — and 45% of the companies overall — plan to take their vendors' word when it comes to verifying package compliance for year 2000 requirements. Those users have no plans as yet to test the products themselves, or they simply plan not to do any testing.

Packaged application products in a mainframe environment can include systems management tools and utilities, monitoring tools and products that support production, and automated operations. The list includes products from the big players such as IBM and Computer Associates International, Inc. and products from thousands of small and midsize companies.

"It is mandatory for users to test their products, primarily because vendors base their assurances on their own tests of their own software in their own environments," said Tom Oleson, an analyst at IDC.

DIFFERENT STROKES

Problems also can arise because different vendors can take different approaches in achieving year 2000 compliance.

"One of the unique aspects of testing [vendor] products is that, in many cases, we have no idea how the products work and how they use dates because we don't have the source code yet," Clark said. Trigon has more than 130 products from outside vendors. "The issue for us is that we want to make sure that all of these products will continue to work together."

Testing to make sure they do is proving very expensive, though. None of the tools that works with custom applications works with vendor products.

To test products, users have to replicate their whole production environment and run it as if it were the year 2000. That means buying more hardware or partitioning their mainframes.

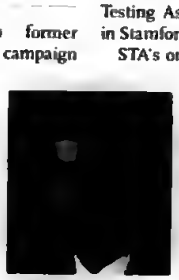
The first option is expensive not only because of the additional hardware, but also because of the additional software licenses that users must purchase. The second is cheaper but somewhat risky — running a test environment next to a company's most crucial production data could compromise the whole environment, users and analysts said. □

& There is no protection in sight from year 2000 litigation, senator says. Page 40

Former CIOs pitch year 2000 test standard

By Thomas Hoffman

TWO WELL-KNOWN former CIOs have launched a campaign — and a business — to help companies that are testing their year 2000 software do it right the first time.



DuWayne J. Peterson Jr.: Companies "need another set of expert eyes"

Paul A. Strassmann and DuWayne J. Peterson Jr., former chief information officers at Xerox Corp. and Merrill Lynch & Co., respectively, last week opened the Software Testing Assurance Corp. (STA) in Stamford, Conn.

STA's on-site consultants will act as independent auditors to assess a company's year 2000 testing procedures, recommend improvements and ultimately certify the testing plan as rock-solid.

STA's founders last month submitted a software testing methodology as a possible public-domain standard. The goal is to provide a model that all companies could use to make sure their testing plans will work.

Peterson, STA's vice chairman, said he and Strassmann decided to form the company after recognizing that users are running out of time to complete their year 2000 testing before Dec. 31, 1999, and can't afford mistakes or rework.

Companies "need another set of expert eyes" to review their millennium test plans "before they pull the switch and go into production," said Peterson, 65, who has been a consultant since he retired from Merrill Lynch in 1991.

Strassmann is a consultant, author and a columnist at *Computerworld*.

STA's proposed standard is before the Software Productivity Consortium in Herndon, Va., a group devoted to software improvement. Thirty software experts are reviewing and revising the testing methodology.

"The IT community has taken a pretty ad hoc approach to [year 2000] testing, and this is an effort that will provide, perhaps, a common framework," said Bob Small, a senior member of the software consortium's technical staff.

The proposed standard is available for public comment at the Web site *www.software.org/Y2k/index.html*.

Some observers praised the effort to certify testing plans, but there are skeptics.

"Everybody would like [external] assurance that their year 2000 test plan is going to work, but I'm always a little reluctant when I hear the words 'year 2000' and 'certification,' because it could give people a false sense of security that everything will be covered," said Jim Jones, managing director of the Information Management Forum, an Atlanta-based group of CIOs. □

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COMMENTARY

Make your intranet do more

Dan Gillmor

So you've set up a Web site and an intranet to keep customers, employees and other interested parties better informed.

That's helpful, but it's only a start.

Now it's time to think about how you can use cyberspace to help foster a sense of community.

If you do it right, you'll be rewarded with more customer and employee loyalty. I've been online for well over a decade. I've joined a number of discussions and other cyberhappenings — on technology, wine, music and more — that reached, at least in my mind, the level of community. Those are communities of interest, not geography.

Just as a public Web site differs from an intranet, online communities differ depending on the intended membership. But they have some things in common. To make them, you can use public forums, mailing lists, Web sites, chats or a combination. The key isn't technology, but the way it's used.

Some technology companies understood years ago the value of creating online forums for their customers. Smart companies used the medium to learn, not just to promote the company line.

One thing such early adopters discovered was that customers often can answer one another's queries more quickly than the company itself can. Many businesses foolishly omit that outlet. Gentle moderation may be needed to keep such discussions on track, but that shouldn't morph into arrogantly deleting postings that say unfriendly things about products.

External communication is one thing; many companies have been trying for years to build 'net-based communities with customers (and potential customers). What tends to be overlooked, however, is how the intranet can build a sense of community internally, going far beyond E-mail.

As with external communities, it's a mistake to think of internal electronic community building as a replacement for company picnics or watercooler chat. Instead, think of the intranet as a new way to make the job better for the staff, and for the company to operate smarter.

How? Consider, for example, an electronic version of the old-fashioned suggestion box, which has always been emblematic of a fundamental truth: The collective brainpower of any organization is greater than any individual's intelligence. But you can enhance that notion online. A threaded discussion of an idea will quickly pinpoint some of its advantages and flaws.

Internal community, especially online forums, can create a new way of thinking for bosses, not just the rank and file. The openness of the medium implies, if not demands, mutual respect. If you're the type of boss who hoards your subordinates' good ideas and makes them your own, this is definitely not for you; it's obvious who has the best ideas.

A more interesting challenge crops up when an enterprise or department routinely compartmentalizes even the most trivial information, keeping it away from everyone except those who "need to know." Will that kind of culture turn off prospective workers? I believe it will.

Another challenge will be knowing when to put on the brakes. No one expects trade secrets to move freely about an intranet, but what about, say, salary information or heavy strategic plans? A bias toward openness is one thing, a suicide pact is another.

Enterprises that do want to establish online communities should realize that they can't just make a community happen. Don't just set up an online forum and declare the existence of a new community. Create conditions under which community can form and thrive. Then watch what happens. □

Gillmor is technology columnist at The San Jose Mercury News. *His Internet address is dgillmor@sjmercury.com.*

The elusive search for synergy

David Moschella

It's only February, and 1998 has already gone down as the year of enterprise services. First, Compaq buys DEC.

Now, for many of the same reasons, Computer Associates wants to take over Computer Sciences Corp. If CA can pull it off, the two biggest deals in this industry's history both will have been driven by a leading product company's decision to acquire a strong enterprise service provider. What's going on?

Those kinds of acquisitions are almost always a one-way street. Hardware and software companies regularly try to extend their services offerings, but services companies rarely stray into the product business. The reason for that is clear. Product companies believe that providing services will help them sell more product. But few services companies believe that owning any one product will help them sell significantly more services.

Perhaps that is why the history of this subject is such a sad one. Companies whose products have fallen behind often have turned toward services as their default marketing strategy. That's what happened to just about all the old systems companies. Digital Equipment, NCR and Unisys all migrated toward services as their ability to sell products languished. IBM's products have fared better, but their overall evolution has been similar. Until now, it's been almost axiomatic: When a product vendor starts talking about services, it's a safe bet that its products are in trouble.

That's what makes these latest deals so interesting. In both cases, the acquiring product company is also a strong market leader. Compaq is the world's largest PC company; CA is, at least arguably, the leader in enterprise systems management software. For such companies to bet so heavily on services is unprecedented. What are they thinking?

The answer is synergy — that mythic world where 1 + 1 = 3. Apparently, Compaq believes that services will elevate it to this industry's highest echelon. And apparently, CA feels the need to match IBM's unrivaled product and services capabilities. Both companies predict that synergy will raise their game to a new level. By becoming a "next-generation IT services provider" (to use CA Chairman Charles Wang's lofty phrase), they hope to make mere product vendors appear outgunned and outdated.

However, from a historical perspective, there's little evidence to support such a view — especially for CA/CSC. In fact, in that case, the problems could outweigh the gains. For every customer who wants an integrated relationship, two will want to avoid being locked in to any one vendor. Partnering also becomes much more difficult. How will CA's new services interest affect its relationships with Electronic Data Systems or Andersen Consulting? How well will CSC be able to work with IBM?

Even if the companies can manage to work well together, the rewards will likely prove modest. Although people think of them as big companies, neither Digital nor CSC account for even 5% of the global professional services business. That isn't enough to radically change the nature of competition in PCs, servers, systems management or any other major product segment.

If this new, more integrated approach starts to win in the marketplace, it will have serious implications for many of today's highly specialized product and service providers. But to me, it's more likely that the rules of the game will remain much as they have been. Compaq's and CA's products and services will live or die on their own merits. Synergy will remain a minor part of the story. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

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MICRON

Thinking Out Of The Box.

The Back Page

alt.cw

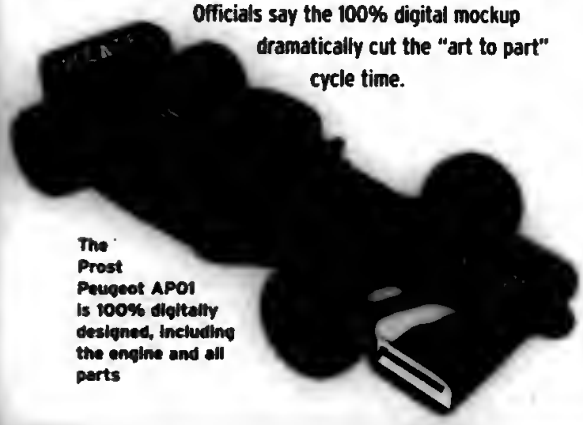
Dispatches & images from the fringes of the electronic frontier

DO YOU BUY IT A DRINK AT THE 19TH HOLE?

The U.S. Patent Office recently issued patent No. 5,711,388 to GolfPro International in Santa Clara, Calif., for the invention of a robotic golf caddy. It follows the golfer around the course, carries golf clubs, responds to voice commands, avoids hazards, calculates the distance to the hole and follows golf etiquette. The autonomous robot navigates using a digital map of the course and satellite signals.

Digital design, built for speed

Engineers at Prost Grand Prix in France have designed and built a Formula 1 race car – inside and out – using an IBM computer-aided design and manufacturing system. Officials say the 100% digital mockup dramatically cut the "art to part" cycle time.



The Prost Peugeot AP01 is 100% digitally designed, including the engine and all parts

Computerworld INDEX

E-mail messages sent by fans to Olympic athletes in Nagano, Japan:	70,000
Tamagotchi electronic pets sold so far:	40 million
Length of a report titled "The Future of Paper":	300 pages
Total cost of ownership of a typical desktop PC:	$2,800
Total cost of ownership of a typical notebook PC:	$4,200

Sources: Associated Press, New York, CAP Ventures, Norwell, Mass., Meta Group, Inc., Stamford, Conn.

Inside Lines

PeopleSoft, users clash on security hole

A letter was circulated to PeopleSoft users last week, enlisting them to pressure the Pleasanton, Calif., vendor to fix what one user deems a "critical problem" with Windows NT versions of PeopleSoft 6.0. The software's job scheduler can't be run as an NT service without creating a security hole, according to the letter. But PeopleSoft insists no security breach exists. Instead, it's "a manageability issue" that the vendor is reviewing along with "hundreds" of other possible improvements that could be made to the software.

Marketing heads are rolling

Glenwood, Md.-based security vendor Trusted Information Systems made a boo-boo at last week's Computers, Freedom & Privacy confab. What did the company slip into the conference goodie bag to advertise its Recoverkey encryption software? A magnet. Not a nice surprise for people toting floppy disks and laptops in their bags. Oops.

Don't hold back, Christine

Christine Varney is apparently free to speak her mind now that she has left her post as a commissioner at the FCC for a job at a private law firm. To an audience mostly opposed to the federal government's cryptography restrictions, she said: "One of the good things about getting out of government is I get to say, 'Our encryption policy really is screwed up.'" Rowdy applause ensued.

Kahn jab

Smirking at the market convergence of telephones and computers, Starfish Software co-founder Philippe Kahn took a crack at Finland-based Nokia's new cell phones that handle faxes, electronic mail, calendaring, addresses, and so on. "I think they use it to hunt caribou in Finland," Kahn quipped at last week's Mobile & PDA Expo in San Francisco.

Microsoft Exchange won't go Platinum

Microsoft is hunting for a new code-name for the next release of its Exchange messaging and groupware server. It used to be called Platinum, but the company's lawyers axed the name, fearing copyright hassles. You wouldn't think an internal code-name would spark such concern, but Microsoft is a little skittish around attorneys these days. The product is now being referred to internally as the Windows NT 5.0 version of Exchange because it's due early next year — around the time NT 5.0 is slated to ship.

IBM updates OS/390

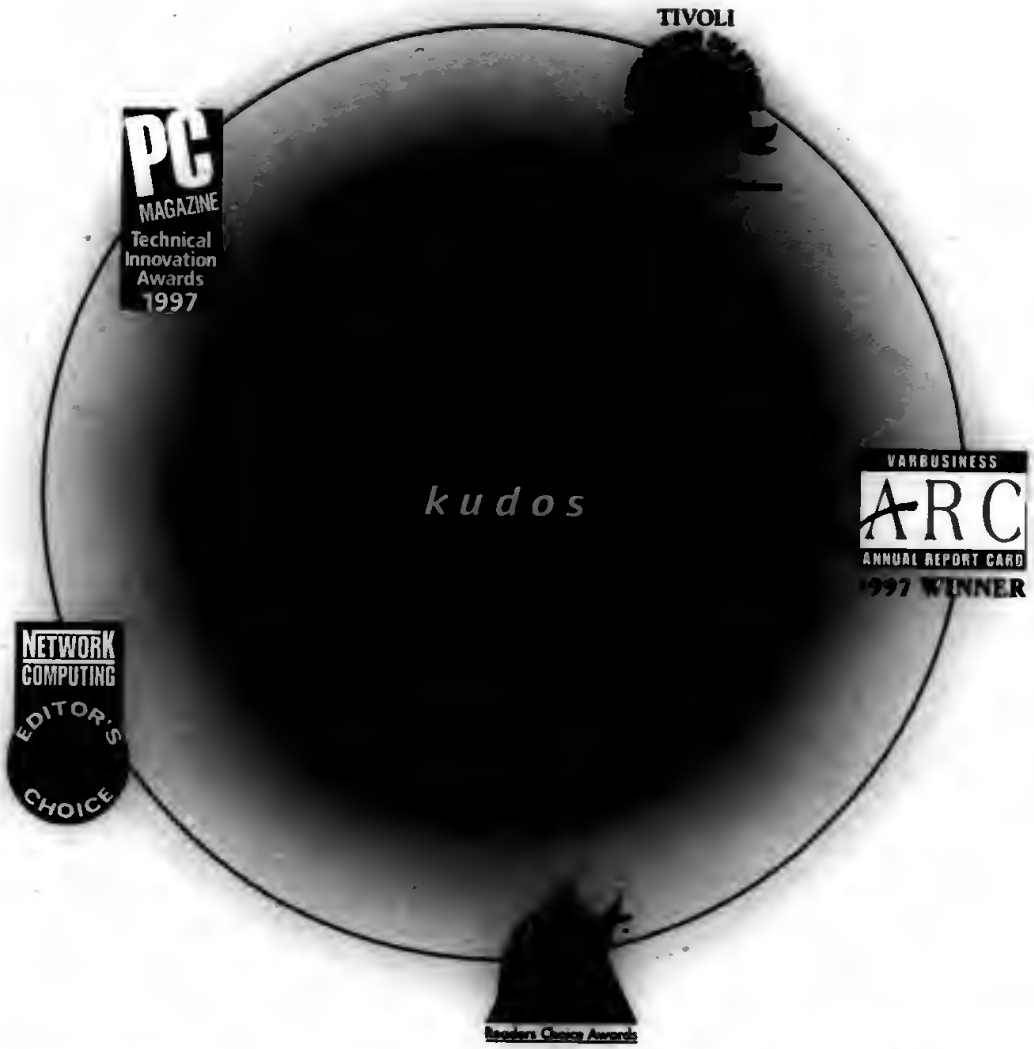
IBM today will announce the latest version of its OS/390 mainframe operating system. The new version will include native TCP/IP connectivity, support for Domino Go WebServer, integrated firewall technologies and enhanced systems management and security.

Wrong numbers drive analyst through the roof

Well-known author and telecommunications analyst Jeffrey Kagan changed his Atlanta-area phone number more than a year ago, but the long-distance information assistance operator still gives out the old number. The old digits connect callers to a roofing business answered by a woman who will cheerfully give you the new number. "I've been getting his calls from people all over the world since February 1997, so I just give out the new one," she says. "If you reach Mr. Kagan, please tell him I could use a little extra money for giving him the help."

Intel may have a fan club soon. The chip maker is offering a subscription newsletter service for the first-time owners of Intel CPUs, and a chance to win T-shirts and other nifty trinkets. Computerworld doesn't give out prizes, but we'd love to hear your news tips. Contact news editor Patricia Keefe at (508) 820-8183 or at patricia_keefe@cw.com.

Tivoli Systems Inc.



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On the subject of ease of use, *VAR Business* Report Card quotes one reseller who says, "TME 10" is more comprehensive and easier to install and implement than any system management software I've tried."

And the folks at *Network Computing* add that "Tivoli's NetView® outclassed all the other products we tested."

Things are easier in the U.K., as well, where *PC Magazine* says, "It really is possible to manage huge, complex enterprise networks. Systems managers everywhere should join with us in applauding Tivoli for its efforts."

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PC Computing, July 1997

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BYTE Magazine, July 1997

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CFO Magazine, November 1997

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Greg Keizer, *CNET.COM*, Dec. 1, 1997

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Computer Shopper, Holiday Issue, 1997

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